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# China's Corporation Regulations

## Government in China

## Metalliferous Mining in Honan

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# THE FAR EASTERN REVIEW

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No. 4

## CHINA'S CORPORATION REGULATIONS

(TRANSLATION OF MANDATE PROMULGATED JANUARY 1, 1914)

### SECTION I

Article 1. The term "Corporation" referred to in these regulations includes only organizations formed for the purpose of carrying on industrial and mercantile enterprises.

Article 2. Corporations are sub-divided into 4 classes:

- (a) Unlimited Corporation (simple partnership)
- (b) Partnership Corporation (mixed corporation)
- (c) Joint stock limited corporation (corresponding to the ordinary foreign corporation.)
- (d) Joint stock partnership corporation.

Article 3. All corporations are recognized as distinct individuals in the eye of the law.

Article 4. The residence of the corporation is the place where the corporation has its head office.

Article 5. A corporation shall not be allowed to begin preparations for its undertaking until properly registered at the Yamen of the local authority.

Article 6. A corporation shall not be allowed to bring suit against a third party until properly registered by the local authority.

Article 7. If a corporation fails to commence business within 6 months after registration, the local officials have the right to cancel its registration at the request of the attorney. The time limit mentioned above can be extended at the request of the Corporation giving satisfactory reasons.

Article 8. If a corporation acts illegally, or disturbs the peace in any way, the local official has the right (or at the request of the attorney) to dissolve the organization.

### SECTION II (*Unlimited Corporation*)

#### 1.—*Organization*

Article 9. When two or more persons organize into an unlimited corporation, each member concerned should countersign the laws and regulations governing such organizations.

Article 10. The laws of an unlimited corporation should explicitly state the following points:

- (a) Trade mark and name.
- (b) The nature of the business undertaken.
- (c) Full names and addresses of stockholders.
- (d) Location of head and branch offices.
- (e) Kind and amount (if property, the estimated value) of capital paid by each stockholder.

Article 11. The corporation shall be required to register at the office of the officials at the places where its head and branch offices are located within 15 days after the laws and regulations of the corporation are signed. The registration shall consist of the following items:

- (a) Repeat (a) (b) (c) under Article 10.
- (b) Head Office and branch offices.
- (c) Date of establishment.
- (d) If the existence is limited, state when to dissolve and why.

(e) The name of one or more representatives of the stockholders.

(f) Kind of capital and value of property rendered in lieu of capital.

Article 12. If a corporation establishes new branch offices, it should register within 15 days of its establishment at the office of the local officers and notify all the local officers at the places where the head office and the other branch offices are. If the new branch office is established at the same locality, it is only necessary to register at the office of the local official.

Article 13. Upon the removal of the head office or branch office from one place to the other, the corporation shall be required to register at the new place in accordance with Article 11 and also register the fact of its removal at the place of its original registration. If the removal is within one legal district, the corporation is only required to register the fact of its removal.

Article 14. If any changes are to be made to the original registration, notification should be sent to the local authorities within 15 days of the alteration.

#### 2. *Internal Organization*

Article 15. Aside from the following restrictions, the corporation has the right to formulate bye-laws regulating its internal affairs.

Article 16. If the capital paid in by a stockholder consists of outstanding loans and accounts and if the latter cannot be collected when due, the said stockholder shall be held responsible for the amount.

In the case mentioned above, the stockholder shall also be liable for any accrued interest or compensations for other damages occasioned by his non-fulfilment of payment.

Article 17. The profits and losses of a corporation shall be borne by the stockholders proportionate to the amount of capital paid in by each, unless otherwise specified in the regulations.

If any definite proportion is pre-fixed, such proportion is applicable in both profits and losses.

Article 18. All stockholders of an unlimited corporation have the right and duty to do business in the corporation, unless certain individuals are specified in the bye-laws to take complete charge of the business.

Article 19. When the corporation is in charge of all or several of its stockholders, all business is to be transacted by a simple majority.

Under ordinary conditions, each stockholder has the right to act as he deems best in his business dealing; but as soon as any one stockholder objects, he should stop and a vote be taken of all the stockholders for a decision.

Article 20. The appointment and discharge of a manager should be determined by a majority of stockholders, even though certain stockholders are delegated with the task of looking after the business.

Article 21. Any alteration of the corporation bye-laws and undertaking of any extraordinary enterprise should have the approval of all the stockholders.

Article 22. Those stockholders who are not in charge of the business shall also have the right to enquire into the business conditions, look over the accounts, and inspect the goods or documents, etc.

Article 23. The stockholders in charge of business shall have no compensation unless specified.

Article 24. A stockholder who has advanced funds for the urgent need of the business has the right to ask for a refund of the amount, plus interest; if a loan, he can demand suitable securities.

A stockholder who has suffered damages on account of the business and not due to his own fault, has the right to demand compensation.

Article 25. When a certain stockholder or several stockholders are designated to take charge of the business, these stockholders cannot resign without satisfactory reason, nor can they be discharged without reason.

Even if satisfactory reasons are given, the resignation or discharge becomes effective only after meeting the approval of all the stockholders.

Article 26. The stockholders in charge of the business should conduct all transactions in accordance with the corporation regulations and with the business policies determined upon at the stockholders' meetings. If anything is done in conflict with these principles, resulting in a loss to the corporation, the stockholders in charge are liable for the damages.

Article 27. Any stockholder who may receive funds for the corporation and fails to turn them into the corporation treasury at the proper date, or any stockholder who has borrowed money from the corporation without the approval of the other stockholders, is liable for the interest and for damages if the corporation suffers any as a consequence. The stockholder in charge of business shall render a report of the business at the request of the corporation.

Article 28. No stockholder shall be allowed to conduct business of a similar nature for himself or for other parties, nor to participate in similar corporations as an unlimited stockholder without the consent of all the other stockholders.

In case of any stockholder violating the above regulation, the corporation, with the approval of the majority of all the stockholders, has the right to take possession of his business as its own.

The above mentioned privilege of the corporation shall be void, if any of the other stockholders fail to act within 15 days after being informed or within one year after the thing is done.

Article 29. No stockholder shall be allowed to dispose of part or whole of his stock to a third party without the approval of all the other stockholders.

### 3. External Relations

Article 30. The corporation shall have the right to designate any one of its stockholders as a special representative in accordance with its laws or with the approval of the stockholders. If not designated, any stockholder shall have the privilege of representing the corporation.

Article 31. The stockholder designated to represent the corporation shall represent the corporation on all occasions, whether in the case of a lawsuit or a business transaction.

Article 32. Any restriction upon the power of attorney, provided by corporation regulations or enforced with the approval of other stockholders is not valid to a third party not informed of such restrictions.

Article 33. Any damage done to others by the attorney or manager in conducting the business of the corporation, shall be borne by the corporation unless such damage is directly due to the fault of the individuals.

Article 34. When a stockholder is conducting business or other legal transaction on behalf of himself or of a third party with the corporation, he is not allowed to be the representative of the corporation at the same time except when such transaction consists of the return of loan to the corporation.

Article 35. In case the total resources of the corporation are insufficient to cover the losses, the stockholders shall be held responsible for the excess liability.

Article 36. Any stockholder joining the corporation shall be held equally responsible for all the debts of the corporation contracted before his entering into the business.

Article 37. Any non-stockholder who acts ostensibly as a stockholder of the corporation shall be held equally responsible as a regular stockholder in relation to a third party not so.

Article 38. Any reduction of capital does not affect the liability of the stockholders in relation to the creditors of the corporation. (This rule does not apply when the creditors fail to complain after the fact of such reduction has been registered at the offices of local officials.)

Article 39. In case of a corporation suffering losses, any subsequent profit should be reserved to make up such losses before any portion of it can be distributed to the stockholders.

In case of violation of the above rule, any creditor of the corporation has the right to complain and make the stockholders reimburse the corporation.

Article 40. The debtors of the corporation shall not be allowed to cancel the debt they owe to the corporation on account of being the creditor to any of its stockholders.

Article 41. Any stockholder may not request the withdrawal of his share of the corporation's capital stock, until the corporation is dissolved or he is permitted to withdraw.

### 4. The Withdrawal of Stock.

Article 42. In the absence of any definite specification regarding the duration of the corporation, any stockholder can tender his resignation at the end of a fiscal year, but a six months' notice to the other stockholders is necessary. Under extraordinary circumstances, a stockholder may withdraw even when the time existence of the corporation is pre-determined.

Article 43. Apart from the above, a stockholder may withdraw for any one of the following reasons:

- (a) In accordance with some previous agreement as provided in the corporation by-laws.
- (b) When approved by all the other stockholders.
- (c) Death.
- (d) Bankruptcy.
- (e) Insanity.
- (f) Compulsory discharge.

Article 44. The compulsory discharge of a stockholder is allowed under any of the following circumstances. It is only to be carried out with the approval of all the other stockholders and after the stockholder concerned has been duly notified.

- (a) Non-payment of capital shares.
- (b) Violating Article 28.
- (c) Improper conduct in any business transactions or while representing the corporation.
- (d) Unreasonably interfering with the management when one is not in charge, or use of corporation marks and seals without discretion.
- (e) Failure to fulfil important responsibility.

Article 45. When the trade name of the corporation consists of the names of the stockholders, the name shall be altered at the withdrawal of any one stockholder.

Article 46. In the separation of stock, the corporation property is to be estimated at the market value and the withdrawing stockholder may be paid in currency irrespective of the nature and kind of capital he rendered at the start.

Any unsettled affair at the time of withdrawal may be left until a more convenient time when a precise calculation is possible. The claim of the stockholder who withdraws upon the corporation may be settled in any way the corporation may deem best.

Article 47. Stockholders who have become such for merit of service or good will, may be dealt with according to the above rule, unless the corporation by-laws provide otherwise.

Article 48. A stockholder should register at the office of the local official before his withdrawal. His responsibility for the unlimited liability of the corporation continues to exist until two years after the registration of his withdrawal. The above rule also applies to a stockholder who has transmitted his stock to another with the consent of all the other stockholders.

### 5. Dissolution of Corporation.

Article 49. A Corporation shall be dissolved under any one of the following conditions:

- (a) At the conclusion of a pre-determined term of existence or when any prescribed circumstance takes place.
- (b) When the business attempted is done or when the business is no longer possible.
- (c) When all the stockholders agree to dissolve.

- (d) When only a single stockholder remains.
- (e) When combined with other corporations.
- (f) When bankrupted.
- (g) At the order of the local official.

Article 50. A corporation dissolved for the reason mentioned under (a) of the above article, may be re-organized and continue business with the consent of two or more stockholders. Those stockholders not willing to join may withdraw.

Article 51. With the exception of bankruptcy and combination, (e) and (f), a dissolved corporation shall be required to register at the office of the local official within 15 days of dissolution.

Article 52. A corporation may combine with any other corporation with the consent of all its stockholders.

Article 53. Within 15 days after the decision to combine is passed, the corporation shall have ready a complete inventory of all its belongings and a balance sheet of all liability and resources.

The corporation shall notify all its creditors and publish its decision to combine and the manner of subsequent arrangements within 15 days after such decision is passed. It shall also set a time limit for parties wishing to complain; the time limit shall not be under three months.

Article 54. A corporation shall not combine until the above-mentioned time limit is elapsed, and any complaining creditor is satisfied with proper refund or security.

Article 55. A corporation which combines without proper notification or in spite of the complaining creditors shall be deprived of its privilege to bring suit against its creditors.

Article 56. A corporation shall register at the office of the local official within 15 days after the combination takes effect, as follows:

- (a) The corporation which does not lose its identity after combination takes place shall register according to the rules governing alteration.
- (b) The corporation which loses its identity after combination shall register according to the rules governing dissolution.
- (c) The corporation which is to be re-organized after dissolution shall register according to the rules governing organization.

Article 57. The duties and rights of the corporation which loses its identity in combination shall pass over to the other corporation which continues to exist or which is to be reorganized.

Article 58. Whenever necessary, the local official may dissolve the corporation at the stockholders' request.

If any stockholder is willing to be held responsible for the above-mentioned circumstance, the local official may refrain from dissolving the corporation at the request of the stockholders but discharge the stockholder whose interest is in conflict with that of the corporation.

The discharged stockholder so declared shall receive a pro-rata share from the corporation based upon the estimated market value.

## 6. Liquidation.

Article 59. The corporation shall not be considered dissolved within the period of liquidation.

Article 60. Unless one of the stockholders or a third person is specially designated by a majority vote of the stockholders, the final processes of a dissolved corporation shall be left in the hands of all the stockholders.

Article 61. In case the manner of disposal of the property of a dissolved corporation has been decided upon, an inventory and a balance sheet should be prepared within 15 days after dissolution.

The relation between the dissolved corporation and its creditors is stipulated under Article 53 (b), Article 54 and Article 55.

Article 62. At the death of any stockholder, the duty and right of receivership shall pass to his legitimate heir. In case there are several heirs, only one is entitled to take part in the work.

Article 63. With regard to a corporation dissolved under Article 49 (d) and (g), the local official may appoint the receiver at the request of the attorney.

Article 64. The receiver appointed by the stockholders may be removed at any time by a majority vote of the stockholders. Whenever necessary, the local official has the right to remove the receiver at the request of the attorney or of any person closely related to the corporation.

Article 65. The appointed receiver shall be required to register his name and address at the office of the local official within 15 days after his appointment.

The change or dismissal of the receiver shall be similarly registered within the same time limit.

The appointment or dismissal of a receiver by the local official shall be duly announced before such appointment or dismissal takes effect.

Article 66. The duty of the receiver shall be as follows:

- (a) To transact the routine business.
- (b) To collect all bills and accounts received, and to pay all debts and liabilities.
- (c) To proportionately divide the corporation property as shown on the balance sheet.

The receiver shall have the right to transact all business incidental to the carrying on of the above-mentioned duties, whether in a lawsuit or anything else.

Article 67. In case there are several receivers, all business transactions are to be settled by a majority vote; but in its relation to a third party, each receiver shall have specific duties and rights.

Article 68. Any restriction set upon the power of attorney of the receiver is void in relation to a third party not duly informed of such restrictions.

Article 69. As soon as the receiver takes up his position he shall investigate into the existing status of the corporation's resources, and submit a complete inventory and balance sheet to the stockholders.

At the request of any stockholder, the receiver shall render a report based upon the facts of his findings.

Article 70. All receivers, including those appointed by the local official, shall carry on their duties in accordance with rules laid down by the stockholders and others intimately associated with the corporation.

Article 71. The receiver shall notify the creditors of the corporation at least three times within two months after taking up his position, and demand from them a statement of credits within a time limit. The time limit so fixed should not be under three months.

Before the termination of the time limit so fixed, no return or transfer of money should be made to any one or more particular creditors.

The receiver shall notify without failure all the creditors alike.

Those creditors who render statements after the time limit expired, shall be allowed to ask for a consideration after all the other creditors are satisfied.

Article 72. In case the available resources of the corporation are insufficient to cover all the liabilities, the receiver shall make demands for additional funds of the stockholders. If the stockholders fail or are unable to make these additional payments, the receiver shall announce the bankruptcy of such stockholders with notification to the proper authorities.

The duty of the receiver is considered as at an end when he has handed over all the corporation properties to the deputy in charge of bankruptcy.

Article 73. The receiver shall not make allotments of the corporation's resources to its stockholders until all the debts have been paid.

Article 74. The balance left over after all the creditors are satisfied shall be allotted to the stockholders pro-rata to their respective amount of capital.

Article 75. The receiver shall render the final accounts to the stockholders as soon as all dealings of the corporation are settled. If no complaint is made within one month after this final rendering the arrangements shall be considered satisfactory to all the stockholders except when the receiver has misbehaved in any way.

Article 76. After all final accounting is done and all claims settled, the receiver shall report and register at the local official's office.

Article 77. All documents, accounts, etc., relating to the business of a dissolved corporation should be kept in a safe place for 10 years. The person to have charge of these shall be determined by a majority vote of the stockholders. In case of dispute, the local authority shall render a decision. All the documents and accounts for safe-keeping shall be available for inspection to any person connected with the corporation.

Article 78. If a corporation is ordered by the authorities to discontinue or if the registration is cancelled for any

reason, the process of winding up shall be the same as in the case of dissolution, and the receiver shall be appointed by the local authority at the request of the attorney or of any party in close connection with the corporation.

Article 79. The unlimited liability of the stockholders shall be terminated at the end of 5 years after the dissolution of the corporation is registered except when there are other special laws providing for a shorter time limit.

The creditor shall have the right to demand payment as long as there is any resource left undivided even after the expiration of 5 years.

### SECTION III

#### *Partnership Corporation*

Article 80. The partnership corporation is organized by members of both limited and unlimited liability. The members of limited liability are only responsible for the amount of capital subscribed.

Article 81. Apart from the specified regulations enumerated below, the same rules governing Unlimited Corporations are applicable in the case of the members of unlimited liability in a partnership corporation.

Article 82. The bye-laws of the partnership corporation shall state the kind of liability each stockholder has, aside from all the other items designated in Article 10.

Article 83. The partnership corporation shall register at the office of the local official within 15 days after the formulation and adoption of its bye-laws. The registration shall include a statement of the number and kind of stockholders aside from the items enumerated under Article 11.

Article 84. The members of limited liability shall pay for its share of capital in currency or equivalents in other kind of properties.

Article 85. All the members of unlimited liability shall have power to transact business for the corporation, if not otherwise specified.

Article 86. When there are several members with unlimited liability, the transaction of business shall be carried on with a majority vote of them all.

Article 87. The appointment and dismissal of the manager shall be made after a majority vote of all the unlimited members is taken. This rule is applicable even when certain members are specially designated to have charge of the business.

Article 88. The members of limited liability shall have power to inspect the inventory and balance sheet or to investigate into the business of the corporation at the end of each fiscal year whenever occasion warrants, special power shall be granted to members of limited liability, at their own request, to inspect the business conditions of the corporation.

Article 89. The members of limited liability shall not be allowed to transfer part or whole of their stock to a third party without the unanimous consent of the members of unlimited liability.

Article 90. A member of limited liability shall be free to undertake the same kind of business for himself or for a third party and shall also be free to join other corporations as an unlimited liability member.

Article 91. Apart from the special representative or attorney appointed by the stockholders or provided for in the bye-laws of the corporation, each member of unlimited liability has the power to represent the corporation in business transactions.

Article 92. The members of limited liability shall not carry on any business transactions or represent the corporation in any way.

Article 93. In case a member of limited liability behaves in such a way as to make others believe that he has unlimited liability, his liability towards a third person not knowing the fact, shall be the same as the unlimited members.

Article 94. The members of limited liability shall not necessarily withdraw from the corporation in case of insanity. In case of death, the stock goes to his heir.

Article 95. In case of unanimous withdrawal of all the members of limited liability or of all the members of unlimited liability, the corporation shall naturally be dissolved. In the former case, however, the members of unlimited liability may reorganize themselves into an unlimited corporation.

Article 95. When a partnership corporation is transformed into an unlimited corporation, proper registration of the dissolution of the former and establishment of the latter should be made at the offices of local authorities within 15 days of the transformation.

### SECTION IV

#### JOINT STOCK LIMITED CORPORATION

##### *1. Organization*

Article 97. A joint stock limited corporation shall have at least 7 persons as incorporators or promoters.

Article 98. The incorporators shall formulate and sign bye-laws including the following points:

- (a) Trade name.
- (b) Nature of business undertaken.
- (c) Amount of total capitalisation and amount per share of stock.
- (d) Location of head office and branch offices.
- (e) Manner of publicity.
- (f) Requirements of eligibility as directors.
- (g) Name and address of promoters.

In case of indecision, (d) (e) and (f) may be left blank to be filled in at the stockholders' meeting.

Article 99. The following items shall not be effective unless duly inserted in the bye-laws:

- (a) Term of existence of the corporation and circumstances under which to dissolve.
- (b) Amount of excess of selling price of stock over the par value.
- (c) Special privileges to be granted to promoters.
- (d) In case payment of stock is made with some form of property (not currency), the name of such stockholder and the form and value of property rendered and the number of shares assigned to him should be explicitly stated.
- (e) Any initial expenses to be paid by the corporation and the amount of compensation to be granted to promoters.

Article 100. In case all the stocks are subscribed by the promoters, the corporation shall be considered in existence from that time on.

Article 101. When the stocks are all subscribed by the promoters, at least one-fourth of the subscribed amount should be paid in as soon as possible. The directors and auditors are then to be elected by a majority vote of all the promoters.

Article 102. As soon as the directors are elected, the corporation shall report to the local authority for a legal inspection, —whether the required payment of capital has been made and whether the requirements (c) (d) (e) under Article 99 have been adhered to.

Article 103. The local authority, after securing a report of the inspector, shall have the right to modify the amount of privilege and compensation for the promoters, if the latter is excessive and extortionate. If any property rendered by the stockholder in lieu of currency be found to be excessively estimated, corresponding reductions may be enforced, but the stockholder shall be allowed to pay currency if he thinks the official estimation too low.

Article 104. In case the promoters fail to subscribe all the capital, they must get additional subscribers. The capital must be fully subscribed before organization.

Article 105. The promoters shall prepare a stock ledger of the standard form, and application blanks to be filled in and signed by subscribers. The following points shall be explicitly stated:

1. Date of formulating the bye-laws.
2. All the items listed under Articles 98 and 99.
3. Amount of capital stock subscribed by the promoters.
4. Amount of first payment.

In case the price of subscription exceeds the par value of the stock, the subscriber shall state the amount to be paid.

Article 106. The subscribers of stock shall be held responsible for the amount subscribed.

Article 107. The subscription price shall not be less than the par value of the shares. The first payment shall not be less than one-fourth of the par value.

Article 108. As soon as the stocks are fully subscribed, the promoters shall call upon the subscribers for the first payment.

In case the subscription price exceeds the par value, the amount in excess shall be paid with the first payment.

Article 109. Upon failure of the subscriber to make the payment, the promoter shall notify the said subscriber, setting a time limit beyond which, if the payment is not made, his subscription is to be cancelled. The time limit so set must be over one month.

After such notification is properly served and the subscriber fails to pay, the subscription is cancelled and another subscriber is to be secured in his place. If any damage is incurred as a consequence of the subscriber's non-payment, the promoters may demand an indemnity.

Article 110. As soon as the first payments are all collected, the promoters shall call the meeting of organization.

Article 111. The proceedings of the meeting shall be conducted in accordance with (a) (b) (c) under Article 145, (a) and (c) under Article 147 and (a) and (b) under Article 150.

The meeting shall have the majority of the subscribers representing the majority of the total capital stock as a quorum. All business shall be transacted by a majority vote.

Article 112. The promoters shall report all the previous transactions during the meeting.

Article 113. Directors and auditors shall be elected during the first meeting.

Article 114. The directors and auditors shall make the following investigations and report to the meeting:

- (a) Whether the capital stock is fully subscribed.
- (b) Whether the first payments are duly paid.
- (c) Whether the requirements of (c) (d) and (e) under Article 99 are properly fulfilled.

In case the directors and auditors are elected by the promoters themselves, another inspector may be elected during the meeting to investigate.

Article 115. The special privileges and compensation to be granted to promoters as well as the initial expenses are subjected to revision by the first meeting if they are in any way excessively stated.

The properties rendered by subscribers in lieu of payment, shall be re-estimated. If in excess of the market values, proper reduction may be made by a decision during the meeting; but the subscriber shall always be allowed to make payments in currency in exchange for the property rendered.

Article 116. The promoters shall be held responsible for any portion of the capital stock left unsubscribed and for the non-payment of the first instalment on the part of the subscribers.

Article 117. In case after the two foregoing articles are enforced, there are still other damages to the corporation, the promoters are liable to indemnity.

Article 118. The first meeting of the stockholders may modify any regulation previously formulated or may stop the organization of the corporation if necessary.

Article 119. The corporation shall be considered in existence at the conclusion of the meeting of the stockholders, except when the capital stocks are fully subscribed by the promoters.

Article 120. If the first payments are not made one year after the stock is fully subscribed or if the promoters fail to call the first meeting of the stockholders within half a year after the first payments are called the subscribers shall have the right to cancel their subscription and demand refunds.

Article 121. Within 15 days after organization, the promoters shall register at the offices of local authorities as follows:

- (a) Repeat (a) (b) (c) and (e) under Article 98.
- (b) Head office and branch offices.
- (c) Date of organization.
- (d) Amount paid in by subscribers.
- (e) Name and address of directors and auditors.
- (f) In case of fixed duration, state the length of period to exist or the circumstances for dissolution.
- (g) If interest is to be distributed before the commencement of business, state the rate.

Article 122. In case of the establishment of additional branch offices or the removal of any office from one place to the other or the alteration of any of the registered items, Articles 12, 13 and 14 are applicable.

Article 123. After the registration of the corporation, the subscribers shall not cancel their subscription with complaints of fraud or of having acted under compulsion.

## 2. Stocks

Article 124. The capital of a joint stock corporation shall be divided into shares. The par value of each share shall not be less than fifty dollars except those shares to be paid in one instalment when twenty dollar shares are allowed.

Article 125. The corporation may issue preferred stock in accordance with regulations.

Article 126. The liability of the stockholder ends with the full payment of the amount subscribed for.

All payments of stock shall be made in available funds and not in outstanding credits.

Article 127. In case a single share is jointly owned by several persons, one of them shall be assigned to exercise all the duty and right of the stockholder, but all of them are jointly liable for the total amount subscribed for.

Article 128. No shares of stock shall be issued until after the corporation is properly registered.

The share certificate shall be declared void if issued contrary to the foregoing rule, and the subscriber may demand damage.

Article 129. Each stock certificate shall have an assigned number and be signed by the director. The following points are to be stated on the certificate:

- (a) Trade name of the corporation.
- (b) Date of organization and registration.
- (c) Total capitalisation and par value of each share.
- (d) If preferred stock, state the amount and nature of preference.
- (e) If the payment of stock be made in instalments, state the amount to be paid each time.

Article 130. The shares of a corporation may be transferred to others at the stockholder's will without consulting the corporation unless otherwise stipulated in the corporation laws. Shares shall not be transferred or be contracted to be transferred from one person to another until the corporation is properly organized and registered.

Article 131. If the certificate is one of the registered kind, due change of name and address on the stock ledger and on the certificate is necessary before the transference becomes effective.

Article 132. A corporation shall not buy its own shares or accept such as security. The shares reverted to the corporation in any way shall be disposed of at an early date.

Article 133. The corporation shall under no circumstance cancel any of its shares except when the capitalisation is reduced.

Article 134. In demanding payment from shareholders, notification shall be sent to the parties concerned at least a month ahead of time.

Upon the failure of payment at the stated time, the corporation shall deliver another notification setting a time limit (over a month at least) beyond which if the payment is not made, the rights of the shareholder shall be withheld.

Article 135. The corporation shall demand interest for the period after due date until the payment is made. In case a special fine is fixed in the bye-laws, for non-payment when due, the corporation shall have the right to enforce it.

Article 136. If the shareholder fails to pay after the corporation has done everything in accordance with Article 134, the shareholder shall lose all the rights in connection with his shares.

Article 137. In case the delinquent shareholder has secured his share through transferring, the corporation shall look up the name of the original shareholder and demand payment from him within a month. When the original shareholders receive the above notification, the one who makes the most prompt payment shall secure the share. In case nobody responds after notification, the corporation shall dispose of the said shares at auction. If the amount thus secured is not sufficient to cover the payment due, the corporation may sue the delinquent stockholder for the balance.

Article 138. The liability of the original shareholder terminates two years after proper registration and recording in the stock ledger of the fact of transference.

Article 139. Until the full payment for the share is made, the corporation shall not issue certificate at the request of the shareholder.

In the case of a non-registered certificate, the shareholder may request to have it changed to a registered form at any time.

Article 140. The stock ledger shall contain a detailed account of each share with systematic denotations. The following record should be made:

- (a) The number of shares subscribed by each stockholder, and the number of certificate issued.
- (b) The name and address of the stockholder.
- (c) The amount paid in by each stockholder and the date of such payments.
- (d) The date of issue of each certificate.

In the case of a non-registered form, the quantity and numbers of certificates and dates of issue shall be recorded. In the case of preferred stock, the word preferred should be put under each number of certificate issued.

### 3. *Regular Meeting of Stockholders*

Article 141. The regular meeting of stockholders shall be held at least once a year at a fixed time after the conclusion of each fiscal year.

Article 142. Apart from the regular meetings at fixed intervals, special meetings may be held whenever necessary.

Article 143. The meetings of stockholders shall be called by the directors, except when specified by the laws of the corporation.

Article 144. Questions brought up during these meetings shall be decided by a majority vote of the stockholders present at the meeting, except when specific rules are inserted in the law of the corporation.

Article 145. For each share of stock, one vote is to be allowed; but when the number of shares held by one person exceeds eleven, special limitation regarding his voting power is to be allowed if specified in the bye-laws.

In case of proxy, the proxy's certificate shall be deposited with the corporation as a subsequent proof.

When a matter is brought up for a decision during the meeting concerning a particular stockholder, the said stockholder shall refrain from exercising his voting power nor shall he be allowed to act as another's proxy in the said case.

The holder of a non-registered certificate shall not be allowed to vote unless he should deposit his certificate with the corporation five days before the meeting takes place.

Article 146. Any stockholder representing one-tenth or more of the total capitalisation shall have power to request the directors to call special meetings, by presenting the matter to be discussed and giving reasons. In case the directors fail to respond to such a request within 15 days, the said stockholder shall call the meeting himself with consent of the local authorities.

Article 147. The corporation shall notify its stockholders one month before the time set for the meeting.

The corporation shall announce and publish the date of its meeting 40 days ahead of time as a notification to holders of non-registered certificates. The notification and announcement shall include a statement of the purpose of the meeting and a description of the matters likely to be brought up for discussion.

Article 148. The minutes of the meeting recording all transactions shall be signed by the Chairman. The minutes shall include a list of stockholders present, the date and place of meeting, the name of the Chairman and the process of decision.

Article 149. The regular meetings shall be the occasion to discuss and pass on the reports of the directors and auditors, and to decide upon the disposal of profits and surplus.

In order to examine the above mentioned reports, a special inspector may be elected during the meeting.

Article 150. In case the meeting is called or any decision is made contrary to the law or regulations of the corporation, any stockholder may report the same to the local authority to declare such decisions void. The report of this nature shall be made within one month after the action takes place.

Article 151. Aside from the directors and auditors, any ordinary stockholder who sues to nullify a corporation decision must deposit his shares with the corporation or additional security may be demanded at the request of the corporation.

### 4. *Directors*

Article 152. The directors shall be elected by the stockholders from their own members.

Article 153. A director shall deposit his shares of stock with the auditor as soon as elected.

Article 154. The compensation for the directors shall be fixed at the stockholders' meeting if not previously fixed in the bye-laws.

Article 155. The term of directorship shall not be over three years, but any person shall be eligible for successive terms.

Article 156. The corporation shall have the right to dismiss any of its directors by a majority vote at the stockholders' meeting, provided there are good reasons. In the absence of any good reason, the dismissed director may demand an indemnity.

If a director resigns without good reason at a time when it would result detrimentally to the corporation, he shall be held responsible for the damages.

Article 157. The directors shall transact all business with a majority vote among themselves unless otherwise specified in the bye-laws. The appointment or dismissal of the manager shall be effected in a similar way.

Article 158. Each of the directors may individually represent the corporation. Articles 28, 31, 32 and 33 are also applicable in the case of directors.

Article 159. The directors shall deposit a copy of the bye-laws and minutes of the meetings at every head and branch office and keep the stock ledger and the counterfile of corporation loans at the head office.

The bye-laws and documents mentioned above shall be available for inspection to stockholders and creditors in accordance with the specifications under Article 22.

Article 160. The counterfile of the corporation's loan account, shall record the following:

- (a) Name and address of the corporation creditors.
- (b) The classified number of the loan agreements.
- (c) Total amount of liability and the amount due to each bondholder.
- (d) Rate of interest on the debts owed by the corporation.
- (e) The method and time of redeeming the bonds.
- (f) The date of issuing such bonds.
- (g) The date of redeeming such bonds.
- (h) If the bond is non-registered state the classified number and the date of issue.

Article 161. When the corporation loses as much as half of its total capital, the director shall call a special meeting of the stockholders and report on the prospect.

As soon as the total resources of the corporation become insufficient to cover all the liabilities, the directors shall report and announce the insolvency of the corporation.

Article 162. With the approval of the auditor, a director may transact business with the corporation on his own behalf or on behalf of a third party.

Article 163. The directors shall carefully observe the rules of the corporation and transact business with discretion. If a director shall act contrary to this principle or misuse the trust in any way, he shall be liable for damages to the corporation.

The directors shall be held responsible for any action contrary to the law and regulation of the corporation and shall be liable for damages done to a third party even if such action be in accordance with the resolutions passed by the stockholders. Exceptions are to be made in case the said directors have, before the stockholders' meeting, objected to and have announced their disapproval to the auditor.

Article 164. If a resolution to impeach a director fail to pass in a stockholders' meeting any stockholder representing one-tenth or more of the capital shall have the privilege to make a similar request to the auditor; the latter upon receiving such a request shall promise to start on the process within one month.

The stockholder requesting an impeachment shall be required to deposit his shares with the corporation to be returned at the conclusion of the lawsuit. The said stockholder shall also submit additional securities at the request of the auditor. In case a decision is rendered against the corporation, the stockholder shall be liable for the damages.

Article 165. Whether the corporation is suing the directors or the directors suing the corporation, the corporation shall be represented by the auditor unless a special legal representative be elected at the stockholders' meeting.

A stockholder representing one-tenth or more of the total capital shall have the right to designate a special representative in suing any of the directors.

### 5. *Auditor.*

Article 166. The auditor shall be elected by and from among the stockholders

Article 167. The compensation of the auditor shall be fixed at the stockholders' meeting unless previously fixed in the by-laws.

Article 168. The term of the auditor shall not exceed one year, but he shall be eligible for successive terms.

Article 169. Article 156 (a) is applicable in the case of the auditor.

Article 170. The auditor shall have power to demand a report of the corporation's business from the directors at any time and to inspect the accounts and documents of the corporation whenever he wishes.

Article 171. The auditor shall check up all reports on documents rendered by the directors and report his findings at the stockholders' meetings.

Article 172. Whenever he deems necessary, he shall have power to call special meetings of the stockholders. During such meeting, the stockholders may elect special inspectors.

Article 173. In case there are two or more auditors each may exercise his right independent of the others.

Article 174. The auditor shall not be allowed to be the director or manager at the same time. But in case of vacancy on the board of directors, before new election can be brought about, then one of the auditors may be called upon to fill the vacancy through mutual agreement of the directors and the auditors.

The auditor chosen to be acting-director, shall not exercise his rights of auditorship until his report and accounts as director are accepted at the stockholders' meeting. Article 27 is not applicable in the case of an auditor temporarily acting as a director.

Article 175. When any of the directors transacts business with the corporation on his own behalf or on behalf of a third party, the auditor shall be called upon to represent the corporation.

Article 176. If an auditor fails to fulfil his duty, he is liable for any damage to the corporation or to a third party.

Article 177. In case the stockholders resolve to impeach the auditor, or if such resolution fails to pass and any stockholder representing one-tenth or over of the total capital requests the director to impeach such auditor, the corporation shall start the process within one month after the request is lodged.

A special attorney for prosecution may be elected at the stockholders' meeting or designated by the stockholder making the request.

The stockholder requesting prosecution of the auditor shall deposit his shares or render additional securities at the request of the directors. In case the verdict is against the corporation, the said stockholder shall be responsible for all the damages.

#### 6. *The Accounting of the Corporation.*

Article 178. The board of directors shall prepare reports as follows to be handed over to the auditors 15 days before the date of regular meeting.

- (a) Inventory of corporation properties.
- (b) Balance sheet of the corporation's resources and liability.
- (c) A statement of the business operation.
- (d) A profit and loss account.
- (e) Recommendations in regard to the sinking fund and dividends.

Article 179. The foregoing reports of the directors together with the report of the auditor shall be kept at the corporation head office during the regular meeting. They shall be available for inspection to all the stockholders and creditors of the corporation.

Article 180. The directors shall submit the reports for discussion, approval and acceptance by the stockholders at the meeting.

Article 181. After the directors' reports are duly accepted the directors shall announce and publish the balance sheet.

Article 182. The responsibility of the directors and auditors shall be considered at an end when all the reports are accepted, except when any fault be discovered later on.

Article 183. Before any dividend is declared, at least one twentieth of the net profit shall be laid aside as a reserve fund. The amount of selling price of stocks in excess of the par value shall also be reserved.

The total reserve shall be one-fourth of the capital.

Article 184. No dividends shall be distributed to the stockholders until all previous losses are made good and the required reserve fund laid aside.

Article 185. When dividends are distributed contrary to the

above rule, the creditors of the corporation shall have the right to enforce a reimbursement of capital.

Article 186. In case the necessary preparation for an enterprise takes more than two years to complete, interest may be paid upon the stocks before commencement of business provided the local authority approves and laws of the corporation allow.

The interest so paid shall not exceed 6 per cent. per annum.

Article 187. The allotment of profit shall be based upon the amount of capital paid in by each stockholder, except when these are preferred stocks.

Article 188. Any stockholder representing one-tenth or over of the total capital shall have the right to request the local authority for the appointment of an official inspector to investigate into the business of the corporation.

Article 189. In case the local official deems necessary after receiving the inspector's report, he shall notify the corporation auditor to call a special meeting of the stockholders.

#### 7. *Corporation Bonds*

Article 190. The corporation shall not be allowed to issue bonds until such resolution is properly passed by the stockholders in accordance with Article 199 (b).

Article 191. The total amount of bond issue shall not exceed the total amount of paid-in capital at any time.

If according to the latest balance sheet, the total resources of the corporation are less than the paid-in capital, the bond issue shall not exceed the value of the available resources.

Article 192. The par value of each bond shall not be less than twenty dollars.

Article 193. In case the pre-fixed rate for redeeming these bonds exceeds the par value, all the bond holders shall be treated alike.

Article 194. When the bonds are issued, the directors shall announce and publish the following:

- (a) The items under Article 160 (c) (d) and (e).
- (b) Trade name of corporation.
- (c) In case there is a previous bond issue, state the balance left to be paid.
- (d) The fixed price for the bonds or the lowest rate at which the bonds may be sold.
- (e) Total capitalisation and amount of paid-in capital.
- (f) The value of present resources according to the latest balance sheet.

Article 195. When the bonds are fully subscribed, the directors shall demand payment for the amount subscribed.

When the bonds are all disposed of and money collected, notification in accordance with Article 160 (c) (d) and (e) shall be given to the local authorities at the places where the head and branch offices are located within 15 days.

Article 196. Each bond certificate shall have a classified number and be signed by the directors together with remarks in accordance with Article 194 (a) and (b).

Article 197. When a bond certificate is of a registered form proper registration of change must be made on the counterfile as well as on the certificate before it can be transferred to a third person.

Article 198. Article 139 is applicable in the case of bonds.

#### 8. *Alteration of Bye-laws*

Article 199. The bye-laws of a corporation shall not be altered or modified in any way except by resolutions passed at the meeting of stockholders.

The above-mentioned resolution shall be passed by a majority vote of a majority of stockholders representing over half of the total capital stock.

In case the stockholders present at the meeting do not constitute a quorum, a majority vote may be taken of those who are present and a tentative resolution drawn to be submitted to all the stockholders, or if non-registered stocks are issued, to announce and publish the resolution with a notice for a special meeting to be called within one month. The said resolution shall be definitely passed or rejected during the second meeting.

The above stipulation shall not be applicable in case the desired alteration has to do with the nature of business.

Article 200. A corporation shall not increase its capital until the existing capitalisation has been fully paid.

Article 201. In increasing the capital of a corporation, preferred stock may be issued, in which case, the advantage and rights of preferred stockholders must be specified in the bye-laws.

Article 202. In case the resolutions of the common stock-

holders are in conflict with the prescribed advantages and rights of the preferred stockholders, the same resolutions shall be brought up and considered in a preferred stockholders' meeting, and the same rules governing stockholders' meeting shall be in force.

Article 203. In issuing new stocks, the original stockholders shall be given the preference. Only the remaining shares left unsubscribed can be disposed of among the outsiders.

Article 204. In increasing the capital of a corporation as soon as the first payments have been made, the directors shall call a meeting of the stockholders to report on the issue of new stock.

Article 205. The auditor shall investigate the following and report to the meeting:

- (a) Whether the new issue has been fully subscribed.
- (b) Whether the first payment has been made in full.
- (c) In case of a subscriber rendering property in lieu of payment on shares, whether the valuation of such property is proper.

The stockholders may also elect a special agent to inspect and report on the above mentioned subjects.

Article 206. In case the said property is found to be over-estimated, Article 115 (b) shall be enforced.

Article 207. The directors shall be held responsible for any stock left unsubscribed or that which is subscribed and not paid for or that which has been subscribed and subsequently cancelled.

Article 208. At the conclusion of the stockholders' meeting specified in Article 204, the corporation shall register at the local authorities as follows:

- (a) Amount of increase in capitalization.
- (b) Date of the passing of resolution to authorize such an increase.
- (c) The amount of paid-in capital of the new issue.
- (d) In case of preferred stock, the special advantage and right of preferred stockholders. Before registering at the office of local authorities, no stock certificate shall be issued and no new shares may be transferred or contracted to be transferred.

Article 209. The stock certificate to be issued to the new stockholders shall be signed by the directors and record the following:

- (a) Trade name of the corporation.
- (b) Date of registration when the capitalization is increased.
- (c) The total amount of the new stocks and par value per share.
- (d) The classified number of the new stock and the rights and advantages of the preferred stockholders.

Article 210. Articles 106-109, Articles 120-123 and Article 128 (b) are applicable in the case of the new stock issue.

Article 211. In case of a reduction in the capitalization, the manner of reduction shall be determined at the stockholders' meeting.

Article 212. Articles 53-55 are applicable in the case of a reduction of capitalization.

#### 9. Dissolution

Article 213. A joint stock limited corporation shall be dissolved for any of the following reasons:

- (a) At the expiration of a previously fixed period, or when certain pre-determined circumstance takes place.
- (b) At the completion of the business undertaken, or when the business becomes no longer possible.
- (c) By resolution passed by the stockholders' meeting.
- (d) When the registered stockholders are less than seven in number.
- (e) When combined with other corporations.
- (f) Bankruptcy.
- (g) At the order of the official.

Article 214. With the exception of bankruptcy, the directors shall notify the stockholders when a corporation is dissolved. In case of non-registered certificates, a public announcement is necessary.

Article 215. With the exception of bankruptcy and combination, the corporation shall register at the office of local authorities within 15 days after dissolution takes place.

Article 216. The resolution causing dissolution or combination with another corporation shall be passed at the stockholders' meeting in accordance with Article 199(b).

Article 217. In case of a dissolved corporation combining with another, Articles 53-57 are applicable.

#### 10. Winding up

Article 218. With the exception of bankruptcy and combination, the winding up of a dissolved corporation shall be put in the hands of the directors, unless special agents are elected at a stockholders' meeting.

If no suitable person is to be secured, the local official shall appoint a receiver at the request of any one closely connected with the corporation.

Article 219. With the exception of the receiver appointed by the local authority, the stockholders may dismiss any other at any time.

The receiver appointed by the local official may be removed at the request of the auditor or of any stockholder representing over one-tenth of the capital, giving good reasons.

Article 220. Immediately after taking up his position, the receiver shall investigate into all the corporation resources and prepare an inventory and balance sheet to be submitted at the stockholders' meeting.

The stockholders may appoint a special agent to check the report of the receiver; when the report is accepted by the stockholders, the receiver shall announce and publish the balance sheet.

Article 221. If the calling of the stockholders' meeting and the manner of passing resolutions are in any way in conflict with the laws or regulations of the corporation, the receiver may request the local authority to nullify the resolutions so passed.

Article 222. In connection with the process of winding up, the duties and rights of the receiver shall be the same as those of directors, apart from the special stipulations given here.

Article 223. In case any of the creditors fails to make the required statement within the specified time after due notification, he shall only be considered after all the other creditors are satisfied.

Article 224. The expenses of winding up shall be paid out of the corporation's resources.

Article 225. In case of any remaining resources after all creditors are satisfied, the amount shall be apportioned among the stockholders pro rata to their respective number of shares, except when there is special stipulation in regard to preferred stocks.

Article 226. At the conclusion of the winding up, the receiver shall submit a report to the stockholders' meeting for approval. The stockholders may elect a special agent to audit the receiver's account and to check up his report. When the report is accepted the receiver is considered relieved from all responsibilities of the corporation except when any fault is discovered later on.

Article 227. All accounts and documents of a dissolved corporation shall be kept for 10 years after the final registration. The custodian of such documents shall be appointed by the local authority at the recommendation of the receiver or those in close connection with the corporation.

Article 228. Even after the process of liquidation is concluded, the local authority may appoint a new receiver to re-open the process, if there are other resources of the corporation available for allotment.

Article 229. Articles 59, 65, 66, 71, 72(b), 76, 78, 146, 147, 150, 151, 163(b), 165, 170 and 171 are applicable in winding up a limited corporation.

#### SECTION V

##### *Joint Stock Partnership Corporation*

Article 230. Among the stockholders of a joint stock partnership corporation, at least one person shall have unlimited liability. The rest are liable for the amount they subscribed.

Article 231. The laws governing a partnership corporation shall be applicable to a joint stock partnership corporation in regard to the following:

- (a) The relation between the unlimited member and the corporation.
- (b) The relation between the unlimited member and the third party.
- (c) The withdrawal of the unlimited member.

As to the rest, the laws governing the joint stock limited corporation are applicable except otherwise specified under this chapter.

Article 232. In organizing this kind of corporation the promoter with unlimited liability shall formulate and sign the bye-laws specifying the following points:

- (a) Article 98 (a) (b) (d) and (e).

- (b) Amount of total capitalisation and par value per share.
- (c) Name and address of unlimited members.
- (d) The amount subscribed; if payment is made in other form than currency, value and description of the property rendered.

Article 233. The unlimited member shall dispose of the shares.

Article 234. The subscription blank shall state the following:

- (a) In accordance with Article 99, Article 105 (a) and (d), and Article 232.
- (b) The amount subscribed by each unlimited member.

Article 235. During the meeting of organization, an auditor shall be elected from among the stockholders. The unlimited member shall under no circumstances serve as an auditor.

Article 236. The unlimited member may make suggestions and recommendations at the meetings, but shall under no circumstances exercise the power of voting.

Article 237. The auditor shall find out whether the shares have been fully subscribed and the kind and amount of payment made by subscribers other than in currency, and report the findings to the stockholders' meeting.

Article 238. At the conclusion of the first stockholders' meeting, the corporation is considered organized and due registration at the office of local authorities shall be made within 15 days as follows:

- (a) In accordance with Article 98 (a) (b) (c) (e) and Article 121 (b) (c) (d) (f) (g).
- (b) Name and address of the unlimited liability members.
- (c) The amount subscribed by the unlimited members, and the kind and amount of payment other than in currency.
- (d) The name and address of unlimited liability member who is specially designated to represent the corporation.
- (e) Name and address of the auditor.

Article 239. In regard to the unlimited liability member designated to represent the corporation, the laws governing the directors of a limited corporation are applicable with the exception of Articles 152, 153, 154, 155 and 156.

Article 240. With regard to transactions requiring the unanimous approval of the stockholders, the same resolution shall be passed by the stockholders' meeting as well as by the unlimited liability members. In adopting the above mentioned resolution, Article 199(b) is applicable.

Article 241. The laws governing the dissolution of a partnership corporation are applicable here.

Article 242. When all the unlimited liability members withdraw from the corporation, the rest of the stockholders may reorganize into a limited corporation in accordance with Article 199(b).

In case of the above-mentioned circumstances, the stockholders shall at once take the necessary steps for the organization of the limited corporation at the stockholders' meeting. At this meeting, the limited member who has subscribed common stocks shall have power as ordinarily regulated.

Article 243. The winding up of a dissolved corporation of this kind except those dissolved on account of bankruptcy, or at the order of the local authority, shall be jointly undertaken by all the unlimited liability members (or a representative receiver elected by them) and the duly elected receiver of the common stockholders, unless otherwise stipulated in the bye-laws.

The unlimited liability members shall elect their receiver by a majority vote. The number of receivers elected by the unlimited liability members shall be the same as those elected by the common stockholders.

Article 244. In regard to unlimited liability members, Article 79 is applicable.

Article 245. After the report and accounts of the receiver have been duly approved and accepted by the common stockholders in accordance with Article 220 (a) and Article 226, the receivers shall also try to secure the unanimous approval of unlimited liability members.

Article 246. The unlimited liability members may at any time dismiss the receiver elected by them with a majority vote among themselves.

Article 247. After the corporation is re-organized according to Article 53 (b) and Article 54, and after the consent of its creditors has been secured, proper registration of the dissolution of the joint stock partnership corporation and organisation of the joint stock limited corporation shall be made at the office of the local authorities within 15 days.

#### SECTION VI.

##### *Fines.*

Article 248. The stockholder having charge of the business, the promoter, director, or auditor or receiver who is found guilty of the following shall be fined not less than five dollars nor exceeding five hundred dollars:

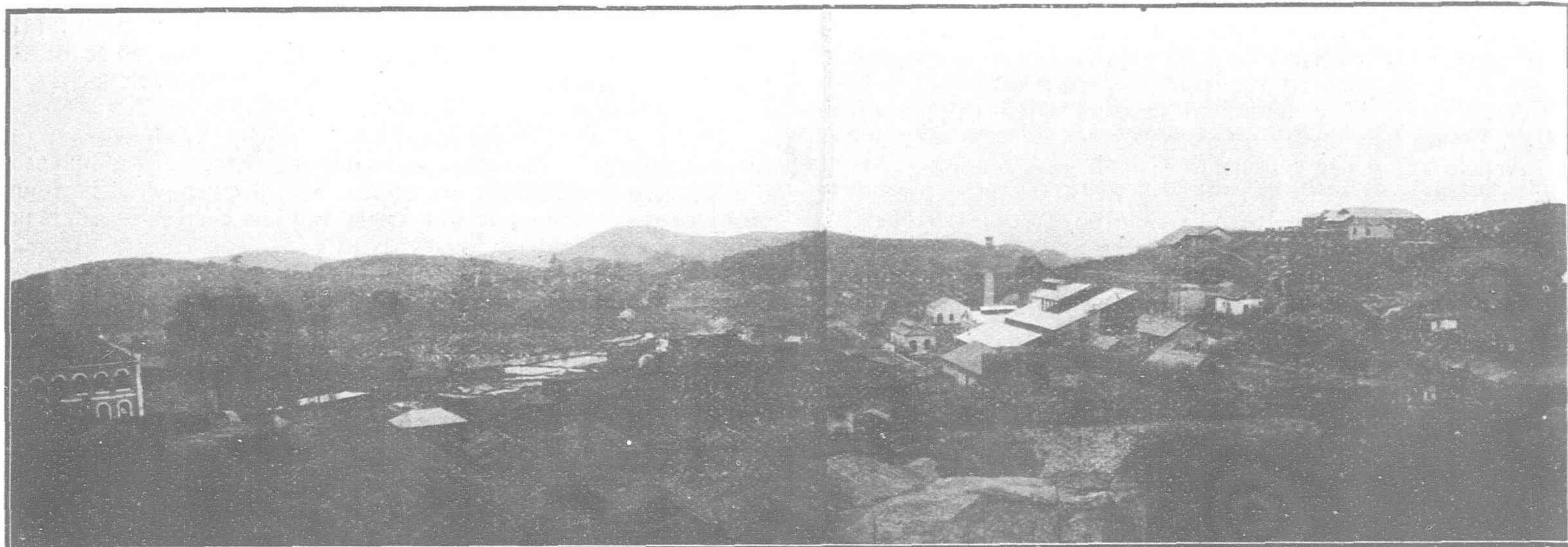
- (a) Failure to report and register at the office of the local authorities as required by law.
- (b) Failure to make the notification and public announcement within the time limit as required by law or when such notifications and announcements are falsely made.
- (c) Failure to submit documents for inspection without a good reason, when such inspection is allowed by law.
- (d) Hinder or in any way handicap the process of inspection provided by the law.
- (e) Start preparations for the commencement of business without fulfilling the requirements of Article 5.
- (f) The failure to make proper subscription blanks as provided for in Article 105 (a) and Article 234.
- (g) When Article 128 (a) and Article 208 (b) are not strictly adhered to in issuing stocks.
- (h) Failure to make proper records on the corporation bond certificates as prescribed in Articles 129, 196 and 209.
- (i) Failure to close the accounts at the fixed intervals or at the winding up of the corporation.
- (j) Failure to deposit the following documents at the head and branch offices as required by law, viz;—the bye-laws of the corporation, the minutes of the stockholders' meeting, the stock-ledger, the corporation loan accounts, the inventory, the balance sheet, the business report, the profit and loss account, and the resolution relating to the distribution of dividends and laying up of a reserve. The improper recording of such documents shall be similarly fined.
- (k) Failure to call the stockholders' meeting as provided for in Article 16 (a) and article 189.

Article 249. A fine not less than ten dollars and not exceeding one thousand dollars shall be imposed for the following violations on the part of the promoter, director, auditor, receiver or any stockholder having charge of the business:

- (a) Unfaithful statements made to the local authority or before the stockholders' meeting.
- (b) Any reorganisation, reduction of capital, combination or disposal of the corporation in any way inconsistent with the stipulations under Articles 53, 54 and 55.
- (c) Hinder or handicap the inspector carrying out his duty.
- (d) The purchase or acceptance as security of shares of the corporation violating Article 132 or the cancellation of shares violating Article 133.
- (e) Issuing non-registered share certificates violating Article 139.
- (f) Failure to announce bankruptcy in accordance with Article 72 (b) and Article 161 (b).
- (g) Failure to lay aside a reserve as provided for in Article 183; failure to declare dividend in accordance with Article 184; failure to conform to Article 186 in paying dividend before the commencement of business.
- (h) Failure to conform to Article 191 in issuing corporation bonds.
- (i) Failure to conform to Article 71 in making refund to corporation's creditors.
- (j) Failure to conform to Article 73 in allotting the corporation property.

Article 250. The common laws governing business operations and business men shall be separately enacted.

Article 251. The time to carry out the above listed laws shall be fixed by extra detailed regulations.



SHUIKUOSHAN LEAD AND ZINC MINE WITH MODERN METALLURGICAL PLANT IN COURSE OF CONSTRUCTION

## METALLIFEROUS MINES OF HUNAN PROVINCE

[By A. S. WHEELER, M.I.M.M.]

Hunan province is generously endowed with a variety of mineral deposits, but before proceeding to a description of these a few remarks on Chinese mining methods will perhaps not be amiss. With the exception of the Shui-ko-shan property, the mines are practically all worked in the primitive Chinese fashion which has been practised without material alteration for centuries past. A Chinese mine may be best described as a ragged hole in the ground off which numerous irregular shaped excavations have been made following the ore and working it out wherever found in sufficient quantity.

The result is a sort of bewildering rabbit warren of workings, usually none too safe, up and down which one clammers on ladders and timbers affording a slippery and precarious footing or grasp. Development work is rarely or never undertaken, so that a reserve of ore is never created, which would serve to tide over a "rainy day;" hence when a poor zone is encountered the mine probably has to be closed down for lack of funds. Practically all work is done on contract, whether mining, hoisting, pumping; or ore treatment. The method of working and the control and direction of the operations is left entirely to the workmen; it is an extremely rare occurrence to find a manager of a mine who will venture underground or who has the necessary knowledge or experience to enable him to assume technical control. The mining is let to one or more underground contractors and paid for at per picul of picked ore; they engage the miners, providing them with the necessary tools and explosives. For the latter purpose native-made black powder is invariably used, the fuse

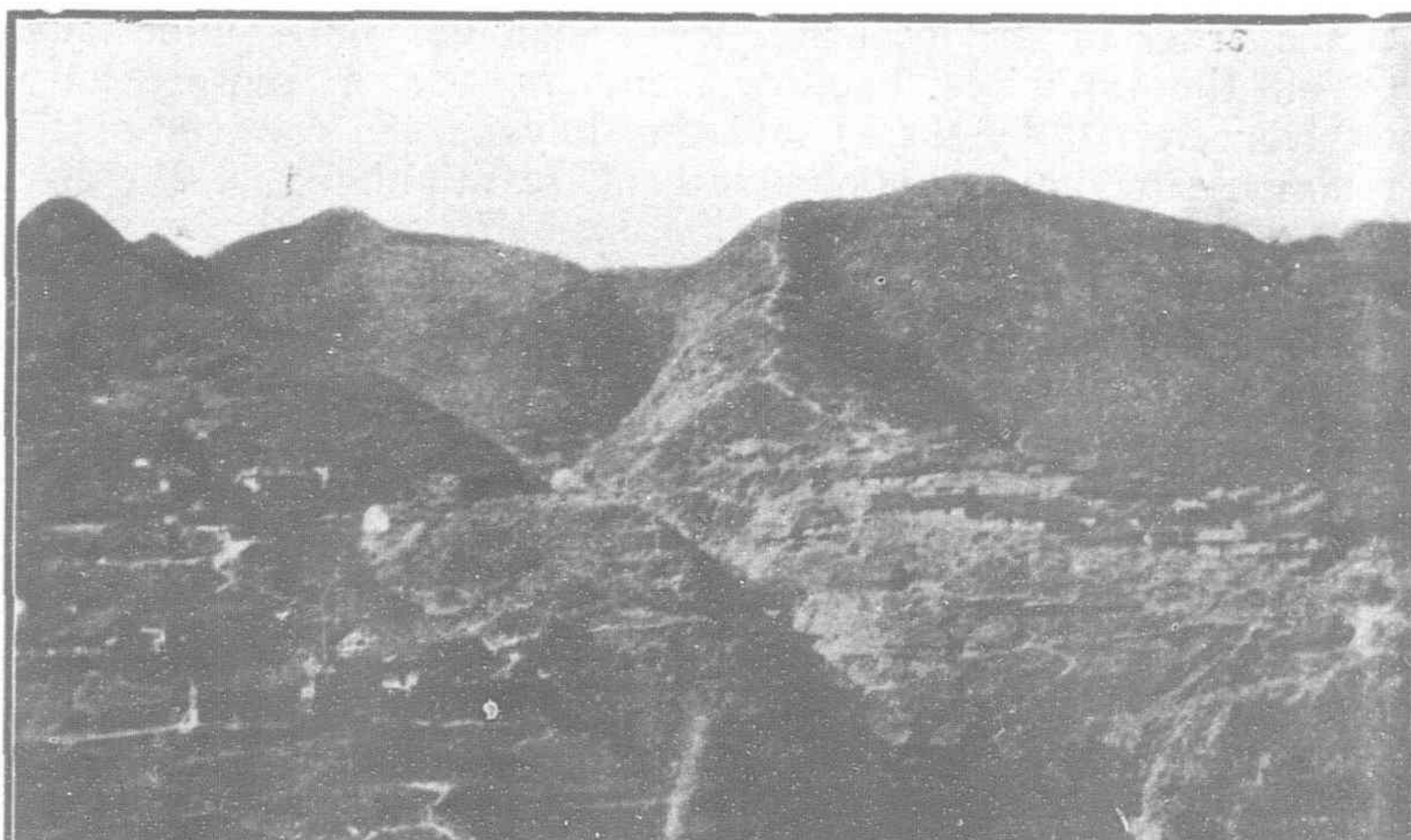
being of straw and touch paper with powder filling. For light, flare lamps are employed; these consist of a shallow iron saucer suspended at the end of an iron rod and filled with vegetable oil in which are immersed wicks made of wood pith. As ventilation is allowed to take care of itself, the underground atmosphere resulting from the fumes of the explosive, and the smoke of the lamps, can be better imagined than described.

The pumps used are quite ingenious. They are made of bamboos 5 inches in diameter from which the inside rings have been cut out, thus forming the pump barrel. The rod is a long strip of bamboo to the end of which is fixed a disc of hide of the same diameter as the bore of the bamboo. This acts as a flap valve and is seated or supported on a smaller disc of wood. A cross piece fixed to the other end of the strip serves as a handle. The pump coolie actuates the plunger, and the discharge end of the bamboo delivers the water into a small cistern or sump on which he sits. The suction of a similar pump above him draws from this cistern and raises the water to the one next above, and so on. The method is crude but it answers admirably for comparatively shallow workings, as labour is cheap and the capital outlay is a minimum.

The broken ore is usually roughly picked over underground to eliminate waste rock and is carried or dragged out of the mine in basket loads of sixty catties weight or more. In the narrow tortuous workings of the average Chinese mine this work is extremely arduous. The ore is then cobbled (i.e. pieces of waste rock detached by hammering) and sorted before being subjected



SHUIKUOSHAN MINE, POWER PLANT AND WORKSHOPS



LIULINCHA GOLD MINES

to treatment for its valuable content. In the following pages the metalliferous deposits are considered in the order of their economic importance and a brief description is given of the larger mines.

### Antimony

This is by far the most important mineral product of the province; in fact China is the world's chief producer of antimony and the bulk of the output comes from Hunan. It is marketed in various forms. Antimony regulus is the metal and the production of it is the monopoly of the Hua Chang Company, granted under the Manchu regime and recently extended by Presidential Mandate. The Hua Chang Company owns the French patent rights for China of the Herreshmidt furnace, which is especially adapted for the treatment of low grade sulphide ore. The process consists briefly in mixing the broken ore with charcoal and heating with regulated admission of air. The sulphide is thereby converted into oxide, which is volatile and is drawn off and condensed in special chambers. The oxide is then mixed with suitable fluxes and smelted in the ordinary reverberatory furnace. The molten metal is ladled into moulds and allowed to cool slowly and undisturbed beneath a covering of slag. This produces the fern-like markings on the surface of the ingot which is held to be a sign of freedom from impurities, but as a matter of fact is not necessarily so. Chinese regulus, however, compares favourably with any on the market and runs over 99.5 per cent. of metal.

Antimony crude is the most usual form in which antimony is marketed in China. This consists of concentrated antimony sulphide, which is obtained by the process known as liquation. The ore, in small lumps or dust, is heated in a clay crucible or pot. The sulphide being easily fusible melts, and percolates through a hole into a lower pot, whence it is ladled into moulds. Crude contains roughly 70% of antimony metal. Another form is ash, which is the residue from liquation. This may run as high as 30% or more of antimony. It was formerly regarded as waste but is now being roasted and smelted locally for the production of regulus. Antimony ore is shipped to Europe for treatment, and works have also been recently established at Hankow for the production of crude and regulus. It must be mentioned that Hunan ores are remarkably free from deleterious impurities such as Lead, Copper, Arsenic, zinc, etc. The export figures from Changsha for 1914 are

Regulus	3,955 tons
Crude	13,792 "
Ore	8,859 "
Ash	2,150 "

Owing to the largely increased demand for the metal, which is used in the manufacture of munitions of war, and to the fact that other producing centres such as Mexico and France are not in a position to maintain their outputs, prices have soared to the highest level yet reached. London price in July, 1914, was £27 per ton, in December £55, and in June of this year was over £150.

Antimony ore is known to occur at numerous points, but the principal mines are located in central Hunan. By far the most important field is Hsi-keng-shan, which lies about 60 li (21½ miles) east of Sinhua, on the Tzu River. The prevailing geological formation here is dolomitic limestone. An abrupt scarp marks the line of reef which is rather over a mile in length and is honeycombed with the workings of seventy companies or owners. The ore is Stibnite, or antimony sulphide partially oxidised in the outcrop zone, and it occurs in the form of seams, pockets and masses generously distributed throughout a layer of limestone varying in thickness up to forty feet.

The ore is rough sorted underground and then carried to the surface where it is cobbled, to remove adhering waste, and close sorted. The picked ore runs as high as 65% antimony, and the lower grades about 40%. The fine ore and dust is concentrated by native hand jigging in baskets. Owing to the high prices now ruling all the old waste heaps are being carefully sorted over and the ore graded up by cobbing followed by crushing and jigging. There are seven local smelting works in

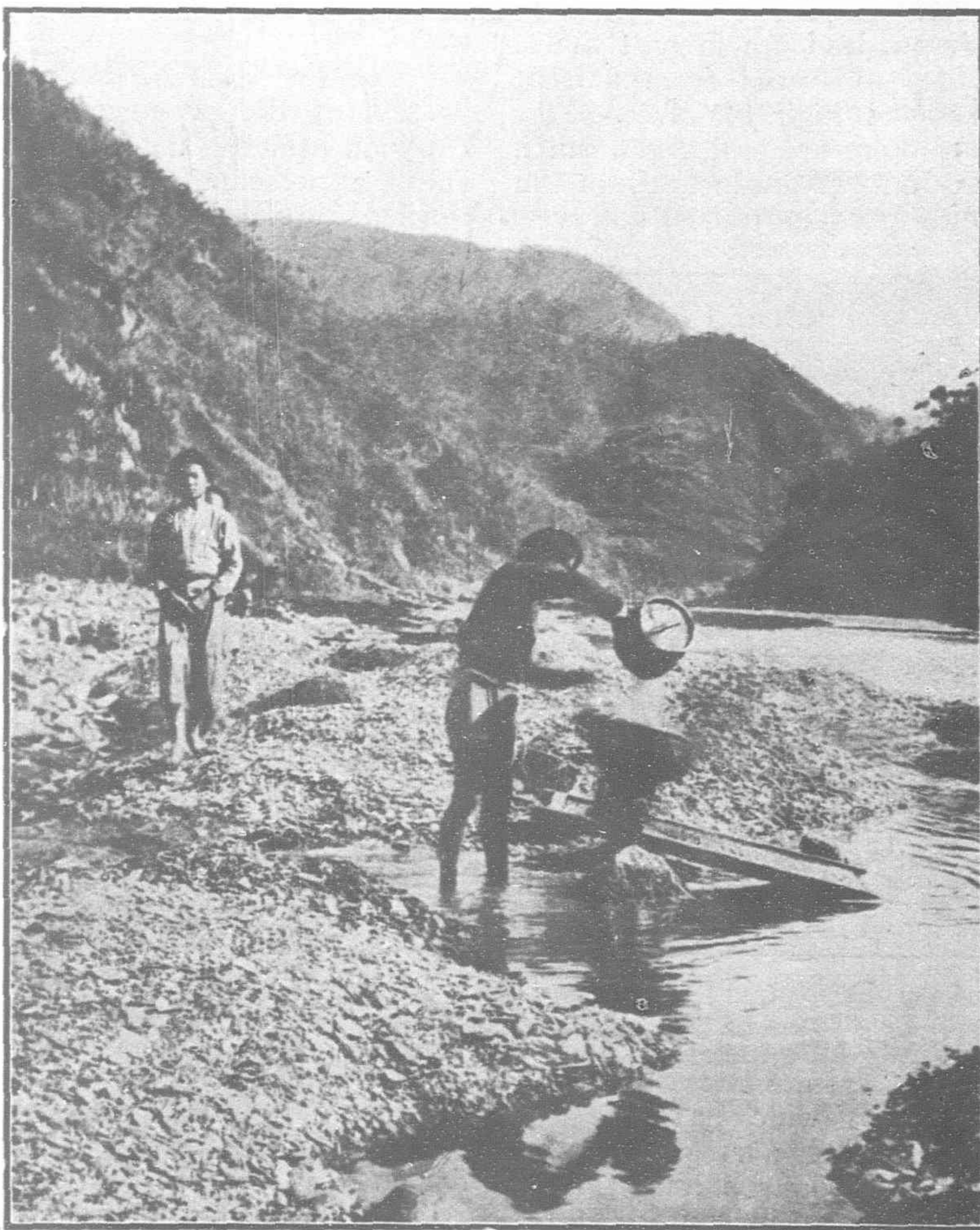
which the bulk of the ore is converted into crude. The oxide ore was being smelted to regulus in reverberatory furnaces, but this is believed to have been stopped by the monopoly holders. The field puts out 1,000 tons or more of crude per month, and it is estimated that fully 10,000 persons are directly employed therein.

The Panhsi mines are situated about 70 li (25 miles) South of Chan-hsi, a small town on the Tzu River about 100 li (36 miles) above Yiyang. The surrounding country is mountainous and is composed of sedimentary strata tilted and bent by granitic intrusion but not much altered. Four mines are being worked here. The ore bodies are of the fissure vein type, the ore occurring in shoo's. These have been worked down to depths varying from 150 ft. to 500 ft. measured on the dip which ranges from 70° to vertical. The vein filling is quartz or interlaminated schist and quartz, and the stibnite usually occurs as a narrow seam hugging the footwall. The average width of the veins probably does not exceed fifteen inches, though very occasionally they swell out to five feet.

There is no dressing or smelting plant; the ore is cobbled and sorted to about 30% grade and about 400 tons is shipped monthly to the Hua Chang works at Changsha. From the mine it is carried 6 li and then rafted down a small stream on bamboo rafts each carrying about half a ton to a point on the Tzu River where it is transhipped into junks carrying 8 or 10 tons each. This ore supplies the Herreshmidt furnaces and it is converted into regulus as previously described. Other mines of less importance are Wu-hsi in Shenchowfu, Hua-pan-hsi in Anhua-hsien, and Chiang-hsi-lung in Chüpu-hsien. These are geologically similar to the Panhsi mines, the ore being however of higher grade. The output from these is less than one hundred tons per month; and there are numerous other smaller producers in various parts of the province.

### Lead and Zinc

The vast slag heaps found at Kwei-yang-chow and to the south-east of Chenchow testify to the existence of a considerable



HONAN PROVINCE—WASHING RIVER SAND FOR GOLD



PATUNGLA QUICKSILVER MINES

industry in the smelting of argentiferous lead ore in past times, and pieces of galena (lead sulphide) recovered from ancient workings in this locality have assayed high in silver. This industry is practically extinct, but there are still a few small mines producing lead and zinc ore and bye-products from the associated minerals. The only one of any importance, however, is the Shui-ko-shan, controlled by the Hunan Official Mining Board. This property, as already mentioned, is run on foreign lines, and is probably the largest of its kind in China. It is well situated as regards transport and accessibility, and can be approached either overland from Hengchow, from which town it lies 90 li (32 miles) distant in a southerly direction, or up the Siang River to Sungpo, the loading station, just above the confluence of the Kwei and the Siang. From Sungpo a light railway 10 li in length connects with the property.

An examination of the geological structure shows that the ore carrier is limestone covered to the north and west by slightly unconformable red sandstone and shale. An intrusion of syenite has tilted these into the form of an anticline, the crest of which has since been denuded. The ore deposit consists of large irregular shaped bodies of mixed Galena, Zincblende, and Iron and Copper pyrites, which have been formed at or near the contact of the syenite and the limestone, as a result of this intrusion. Official records, covering the past twenty years, show that the mine has produced during this period over 50,000 tons of Lead concentrate and over 126,000 tons of Zinc concentrate but there were extensive native workings prior to 1896, probably dating back for centuries. A portion of the mine is still worked in native fashion, but the main workings consist of an incline shaft sunk to a depth of over 600 ft. off which four levels have been driven, and of a small vertical shaft 160 ft. deep below this point serving the fifth and sixth levels. The ore is rough sorted underground and then cobbled and close sorted at surface. This yields clean high grade lead and zinc ore, ready for shipment. The balance is a mixed product of varying size. The lumps are partly stacked as a reserve at surface and the remainder together with the coarse goes to the foreign plant for treatment. The dust and small pieces are sent to the Chinese dressing floors.

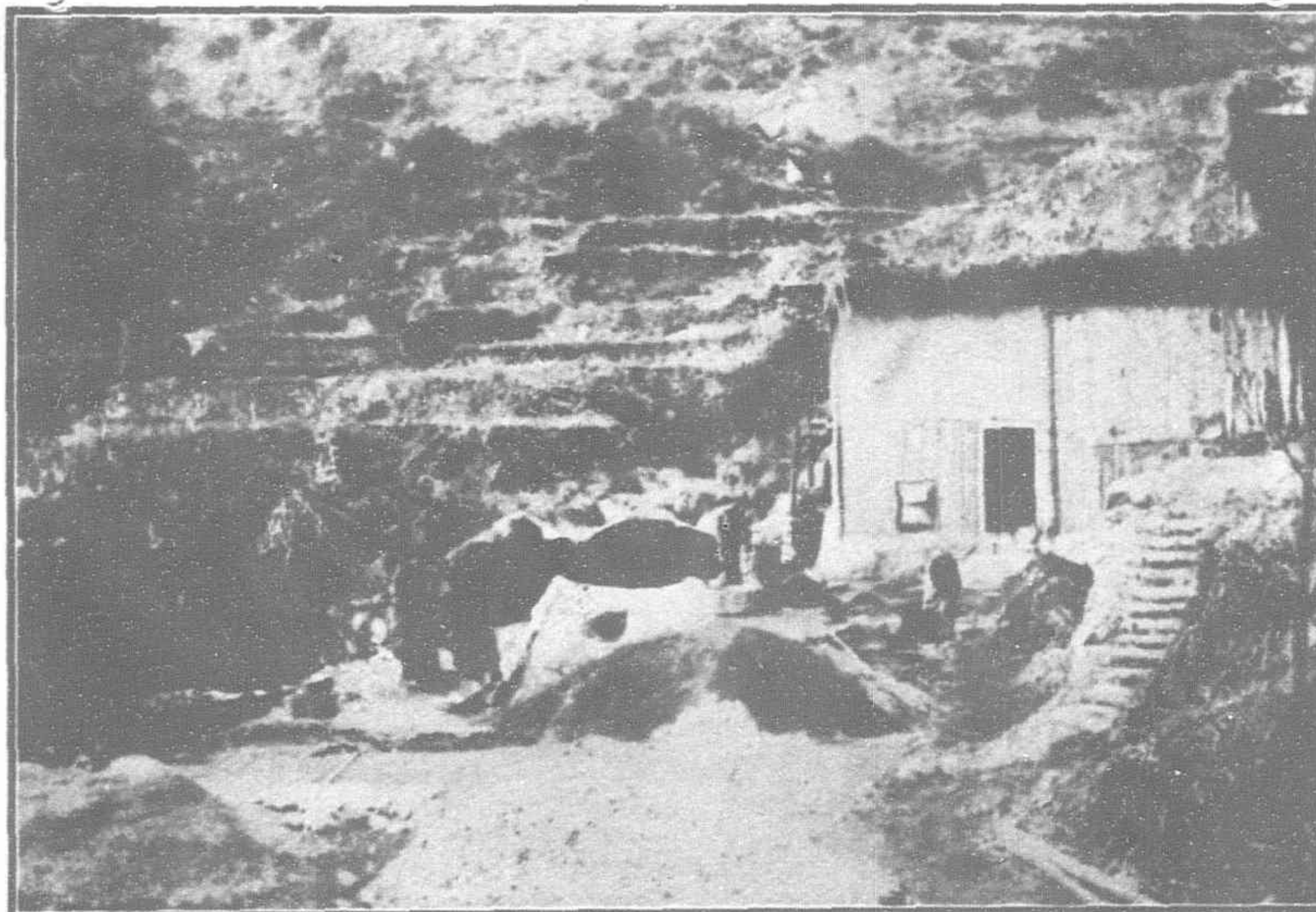
In the foreign plant, the ore is first crushed and sized and then fed to mechanical jigs and wilfley tables which produce a lead concentrate and a zinc concentrate and intermediate products; the latter are at present being stored for future

treatment. The Chinese process consists of repeated hand jigging in baskets, which yields lead and zinc concentrates and a mixture. The latter is treated by washing down an inclined plane several times whereby lead concentrate is separated out, the balance going to waste. The capacity of the foreign plant is about 50 tons per day and of the Chinese plant rather less. A new foreign plant with a capacity of 100 tons per day is in course of erection. During 1914, a total of nearly 56,000 tons of ore was treated yielding 5,000 tons of Lead concentrate and 14,600 tons of Zinc concentrate. These respective products are stated to average 70% of Lead with about 8% Zinc and 30 to 40 ozs. Silver per ton and over 30% of Zinc with 5% to 10% lead impurity. The cost of producing a ton of concentrate is about \$13, local currency, excluding depreciation, amortization, etc. The concentrates are sold under contract to Messrs. Carlowitz & Co., of Hankow, who retreat them in their works at Wu-chang, whence they are shipped to Europe to be smelted. An experimental lead and zinc smelting plant using native methods has been established by the Hunan Board near Sungpo, where both these metals and also silver are being produced.

### Tin

The tin fields of Hunan are situated in the most southerly portion of the province close to the Kwantung border. The An-yuan Mines in the Ichang hsien (or district) show the largest output at present. A deposit of quite exceptional nature is being worked here, and is of a type which, so far as the writer is aware, is known at only three or four places in the world. The formation is limestone tilted and marmorised by a granite mass. A dyke of granite, probably of more recent date than the main mass, has penetrated the limestone and along the course of this are found true chimneys or pipes of tin ore, associated with arsenical pyrites, actinolite, and a little copper pyrites and fluor-spar. The pipes are roughly circular or oblong in cross section, varying from 20 ft. downwards in diameter. The maximum depth reached is about 400 feet and the dip of the pipes ranges from horizontal to vertical.

The mineral contents are arranged in concentric rings or layers, usually sharply defined, and slightly oxidised on the outer edge, the interior being sulphide ore. One pipe is a marked exception to this for it is oxidised to a soft red earth and clay to a depth of 300 ft. The dressing of the ore consists of cobbing and sorting, the clean arsenical ore being stacked for separate treatment. The balance



ORE DRESSING FLOOR AT YUTUNG TIN MINES



LINWU TIN MINES

is then roasted, the arsenious oxide ("arsenical soot" of commerce) being collected by condensation in domeshaped chambers built of rough stone and plastered with clay inside. This soot is placed in thin iron basins over a fire, covered with a similar basin inverted, and subjected to a prolonged second heating, when the arsenious oxide is deposited as a "glass" on the upper basin. It is sold in this form for agricultural purposes. The roasted ore is then crushed by water-driven Chinese stamps, after which it undergoes a series of concentrations.

The first of these is effected by raking the ore over from side to side in a shallow stone-paved pit into which water is flowing. The "heads" from this operation are further concentrated by repeated washings down a concave shaped incline. The concentrates are then mixed with loam and reroasted to drive off the associated arsenic; after which they undergo a second crushing and concentration as above described. The smelting is conducted in a cylindrical furnace built of brick or stone bound with clay. Blast is supplied by a double acting Chinese bellows through a two-inch opening pointing downwards from the back of the furnace. The furnace door is stopped with clay and a layer of live charcoal is placed on the furnace bottom and blown up to a good heat. About 50 catties of concentrate mixed to a thick paste with "incense wood" pulp is then charged in and covered with a layer of charcoal. The smelt lasts for 24 hours, charge and fuel being added half hourly, and the blast continued throughout. Shortly after starting an iron rod is inserted in the furnace door and through this taphole the molten tin trickles out slowly into a clay lined depression where it is kept covered with live charcoal. When sufficient has collected, it is ladled into sand moulds forming ingots of about 45 catties weight each. The metal thus obtained runs over 99% Tin.

The Hsiang-hua-ling Tin Mines are situated in the Linwu-hsien about 50 li North of Linwu, in wild, mountainous country. Five companies are at work here, of which the Hunan Official Mining Board is the most important. The geological structure shows that the mineralization is due to a granitic intrusion between quartzite and a conformably overlying highly fossiliferous limestone. This has produced a displacement and fissuring of the latter, with however but little alteration. The fissures are numerous but apparently of short lateral extent, though well defined. An intersection is usually marked by a good patch of ore. The associated minerals are Arsenic Iron and Copper pyrites; with occasional bunches of fluor spar in big cubic crystals. The processes of ore dressing and smelting are precisely the same as at the Anyuan Mines. A local custom, prevalent in both fields, is to reckon a picul of ore as 180 catties, a picul of concentrate as 115 catties and a picul of smelted tin as the usual 100 catties. No explanation was forthcoming for these standards beyond the fact that it was the custom.

At Kianghwa, to the west of Linwu, there is an extensive tin field extending southwards into Kwangsi and Kwantung provinces, which has by no means yet been thoroughly investigated. Native operations have been more or less confined to the alluvial deposit which is found on the tops and sides of the hills, being retained in depressions in the eroded and rugged surface of the limestone formation. The tin occurs in association with tourmaline, iron and arsenic, and when dressed contains from 50% to 70% metal. The output from the entire field is considerably in excess of either of the two previously mentioned and would be greater but for the fact that the workers suffer much interruption and discouragement by brigandage. There are a few small tin mines situated in the mountainous country to the west of the Kuei River which produce a few tons of metal annually, but they are of small importance.

### Arsenic

The bulk of the arsenic production of the province is derived as a bye-product from the treatment of tin ore carrying arsenical pyrites as previously explained. Realgar (arsenic bisulphide) is found near Tzeli in Northern Hunan, the deposit being reported to be of considerable size and high grade; the mines are closed down at present.

### Quicksilver

This occurs to the west of Feng-huang-ting in western Hunan adjoining the Kweichow border, and forms the eastern end of a belt extending well into Kweichow province. The mines are reported to have been worked intermittently for several centuries and certainly the extent of the underground workings and the size of the waste dumps lend truth to this statement. The two mines at present operating are Hon-tze-ping, situated 60 li west of Fengchuang, and Tatung-la, situated 80 li to the south-west of that town. The enclosing rock or ore carrier at both places is dolomite (magnesian limestone), gently undulating, and free from igneous intrusions. The ore is Cinnabar (mercuric sulphide). At the Hon-tze-ping Mine the deposit is confined to a layer of dolomite ranging up to six feet in thickness, through which the Cinnabar, associated with carbonaceous matter, occurs disseminated in small patches or bunches or as an incrustation on bedding planes. At the Ta-tung-la Mine extensive ancient workings are observable in the surrounding hills. Several owners are at work here of which the Li-hêng Co. is the most important.

The ore is found disseminated through a thickness of about 100 feet of horizontal dolomitic strata in small crystals or blebs frequently associated with long radiating crystals of Stibnite (Antimony Sulphide); occasional rich pockets of ore occur but the deposit is of lower average grade than Hon-tze-ping. At both mines the richer picked ore is crushed by hand and panned down for the Cinnabar content. This is sold direct according to grade, which is estimated by the eye, to buyers from Tungjen in Kweichow. The market price at the beginning of the year varied from 110 to 170 strings per picul and it may be remarked in passing that all payments are made in copper coin. The poorer ore and tailings from panning are retorted for their Quicksilver content. The retort used consists of a thin iron basin 30 inches in diameter supported on stone work at a height of about eight inches above the ground-level. Two other basins, from which the bottoms have been burnt out leaving only deep rims, are fitted in reversed position into each other and placed on the lower basin. The uppermost is then covered with a thin iron plate leaving a circular opening of about twelve inches, and on this is placed an earthenware pot upside down.

The ore previously crushed is charged into the lowest basin, and all joints are luted with clay. A semicircular channel of clay is moulded around the inner periphery of the top basin, and communicates with the interior of the retort by means of three holes. A wood fire is lit and heats the ore. The Cinnabar dissociates into Mercury and Sulphur dioxide; the fumes of the former rise up and partly condense on the interior of the earthenware pot and partly pass via the communication holes into the semicircular channel. The latter is thus a collecting ring, the contents of which go to the company as their share to defray cost of furnace, basins, pots, etc. The amount so collected is stated to vary from 12½ to 15% of the total distillate, but this is rarely or never checked by actual weighings or tests.

No doubt much fraud is practised on the miners although they will not permit the ring and holes to exceed certain dimensions which, however, vary widely at the two mines. It is certain that such factors as grade of ore and heat applied would materially affect the percentage passing into and condensing in the collecting rings. The condensing pot is removed by hand when too hot (which is ascertained by spitting on it as clothes ironers try the heat of an iron!) and a fresh pot substituted. Despite the total lack of precautions in conducting the retorting operations and the lackages of the retorts, very few cases of salivation were noticed. It was stated that furnace men are fully alive to the dangers attendant on such work and do not keep at it for more than three or four years.

### Gold

Evidences of gold washing of river sands are plentiful but the operations do not appear to have been conducted with much profit as only at two points was work seen in actual progress. There are a few mines working and it is doubtful if these are remunerative. The chief of these is near Pingkiang in North-east Hunan close to the Kwangsi border, and about 350 li north-east of Changsha, the capital of the province. This concern is

controlled by the Hunan Official Mining Board, and consists of a number of mines scattered over a mountainous district. The formation consists of a gray slaty schist, carrying veins of quartz. There are numerous small workings dotted about the hillsides, most of which have been abandoned as either profitless or on account of the inability to cope with the water. In most cases the adits or tunnels located on the creek banks were driven down hill, with the result that the working was of course flooded almost immediately.

The Company is at present producing ore from six different mines, located at distances varying from one to eight li from the dressing floor. The average width of the veins varies in the different mines from three inches up to two feet; the wider being generally composed of mixed schist and quartz. A small percentage of iron pyrites and galena is present. The principal mine, called the Kin T'ang, is working two veins intersecting each other at an acute angle and dipping in the same direction. The veins consist of mixed schist and quartz and vary in width up to four feet, but the stope widths are generally two feet or more in excess of this. This mine has been worked to a depth of about 650 ft. measured on the dip of 35° to 40°. The gold occurs in shoots and patches which decrease in depth. The mining is not run on contract; the miners are paid 214 cash per 8 hour shift and all tools and explosives are found by the Company. The pump men and ore carriers are paid 164 cash per shift.

The treatment process consists of the usual cobbing and sorting to eliminate the waste rock. The sorted ore is then crushed in a man-power stamp mill. This is built on similar lines to the old well-known rice mill, except that the face of the stamp, corresponding to the shoe of the modern gravitation mill, is shod with iron and strikes on a cube of iron, which corresponds to the die. The crushed ore is washed over two sets of riffle tables, each table consisting of three boards, stepped, and of a total length of ten feet. The ore is fed on by sprinkling on the head board. The tailings are passed over the tables as often as deemed necessary before going to waste; the concentrates are panned by hand and the free gold thus obtained smelted into ingots of about twelve ounces weight. The balance is fine-ground in small troughs in which an iron disk is rotated backwards and forwards by coolies rolling the axle on the soles of their feet. A similar appliance is used by Chinese chemists for grinding the ingredients of their medicines. After several concentrations by panning and regrinding the sulphurets are roasted in a small reverberatory furnace and again fine ground and sent over the riffle tables.

The Kin T'ang Mine has its own dressing floors, the concentrates only being sent over to the central mill for final treatment. The official returns for the closing months of 1914 show that grade of the sorted ore was about .75 oz. gold per ton and that the output averaged about 120 ozs. gold per month of a fineness of about 920 parts per 1,000.

Other gold mines exist at Suo-sha-po, Lin-lin-cha, and Huitung. The first named is situated 40 li north of the village of Ta-fu-hsi on the Yuan River, in the Tao-yuan hsien. The deposit here consists of an interbedded quartz reef in sedimentary strata composed of quartzites and shales, much hardened and contorted in places. The method of working is by drifts and openstopes although adits suitably located would give several hundred feet of backs. The reef widths vary up to maximum of about two feet six inches; visible gold is occasionally found but it is mostly bound up with iron pyrites, galena, and copper pyrites. Seven pennyweight ore is considered to be good grade. The crushing appliance used here is a stone roller mill driven by water power. The riffle board is employed as a concentrator and the concentrates are fine ground by hand between stones; the tailings are retreated several times before going to waste. Until recently this field was illegally worked and the output at present is very low.

The Liu-lin-cha Mines lie some twenty li distant from the village of that name in the Shenchowfu. Two companies are at work here on an auriferous body which is apparently akin to a "stockwork" (or accumulation of small veins and stringers) resulting from the infilling of fractures produced by a strong fissure. Neither company treats its own ore but sells it at the

pit's mouth to the highest bidder. It is treated in privately owned mills of which there are fully fifty in the valley. The method of treatment is the same as at Suo-sha-po. The average grade probably does not exceed half an ounce of gold per ton, and the total production for the population of 3,000 to 4,000 is well below 100 ozs. per month. It will be realized that the valley does not present a prosperous appearance. The Huitung Mines in the Huitung-hsien, in the southwestern quarter of the province, were reported to have been closed down recently. The occurrence here is stated to be similar to that at Ping-kiang.

### Sundry Mineral Products

Other mineral products of Hunan province include Sulphur, Manganese, Graphite and Alum. Deposits of Copper ore of high grade are reported to exist but are not worked. The production of Sulphur is not inconsiderable. It is obtained by the destructive distillation of Iron pyrites. The lump ore is charged into long cylindrical clay crucibles, covered with moist clay, and supported in an inverted position over shallow pots standing in running water. The crucibles, eighty or more to a furnace, are then packed round with coal cake which is allowed to burn for twenty-four hours. The clay covering dries and cracks, permitting the escape of molten Sulphur, which trickles down into the pots kept cool by the water. Manganese is mined by the Han-yang Iron Works Co. for smelting with their iron ore.

## HUNAN INDUSTRIES

The Tung Ting Tannery, in the province of Hunan, which has been out of working order as a result of the military occupation during the first revolution in 1911, has been restored.

The buildings of the Government Cotton Mill in Hunan are still under construction, but as the Governor of Hunan deems it of great importance that the mill should be completed as soon as possible in order that unemployed people may receive work and the general peace of his territory may be maintained, orders have been despatched to the Financial Commissioner of the province and the Superintendent of the Bank of Hunan, who are acting as the Inspector-General and the Managing-Director of the said mill, respectively, to the effect that the construction of the mill should be pushed forward so that it may be completed and the work commenced before the advent of winter.

The paper manufacturing industry is one of the important items in the programme of the native-goods propaganda and now it receives great attention from Defence Commissioner Yen of Hunan, who is acting concurrently as the Civil Governor of the province. The material for the manufacture of paper in the province is found to be cheap and abundant. In the opinion of the governor, Hunan is a better place for the manufacture of paper than any other province so far as material and labour are concerned. Originally there was a paper manufacturing mill in the province established by merchants under the name of Feng Wha paper mill, but it has been closed on account of the lack of adequate capital. To encourage this industry, the Governor has given instructions to the chief of the Industrial Department in his yamen to approach the principal shareholder of the mill, named Mr. Yang Tsan-hsu, for the discussion of the means of raising sufficient funds for the renewal of the Feng Wha Mill.

The Yo Li Shan Glass factory in Hunan has been lately enjoying prosperity under the superintendence of the Manager Shao. More than Tls. 10,000 has been turned over of late to the Government in repayment of the loan. Nowadays glass is a requisite in the construction of any Chinese house, and as a result its demand has been growing very rapidly. So long as the present war in Europe continues, however, the import of glass from foreign countries remains impossible. At the present rate of production of glass in China, it is far from sufficient to meet the demands for native consumption. In view of this fact, Manager Shao is calling a meeting of the shareholders to devise means for the immediate enlargement of the present plant.

# WHAT THE PHILIPPINE COCOANUT GROWERS NEED

## The Case for and Against Central Drying Plants for Copra Industry

Now that the Philippine Government, after years of labour, has sufficiently organized the Sugar growers of Negros so that a central can be constructed with reasonable assurance of success, the idea of having the Government do work that should be done by the planters themselves has spread to the cocoanut growers as well, and frequent references to the need of a copra drying plant are now made in the Manila Press.

The idea of improving the quality of Philippine copra was taken up with avidity by Vice-Governor General Martin when he first came to the Philippines, although it did not originate with him. As an examination of the files of the Manila Merchant's Association will disclose, the subject had been under investigation by its Secretary for a period of four years before the arrival of the Vice-Governor.

The special Copra Committee which was appointed by Mr. Martin, is composed of Acting Director Hernandez, of the Bureau of Agriculture, chairman; Dr. Bernard Herstein, Insular Collector of Custom; Mr. Traves; and Mr. Gervasio Unson, of Tayabas.

At a meeting of this committee held on August 4, it was decided that the Government should come to the aid of planters of cocoanuts as it had to the sugar planters. The plan favored by the committee is that the Government should establish centrals under identically the same conditions as those now governing the activities of the Central Sugar Board. It was held, according to a newspaper account, that the establishment of such centrals would prove of great value in that it would be possible to install the best drying machinery obtainable and in large measure to standardize the local copra product, which is now known to be considerably inferior to that produced in other countries, particularly in Ceylon. The question of machinery, however, was held open for consideration at a later meeting, it being the desire of the committee to await the arrival of certain copra drying machinery which the Government has already ordered from New York for demonstration purposes.

As the experience of most of the members of this committee is limited to the Philippine Islands, their views and recommendations on such a subject may be assumed to carry very little weight. As for Dr. Herstein, his concurrence in the report of the committee, which we understand was unanimous, would seem to indicate that he had not gone as exhaustively into the subject as one would expect him to do from his reputation as a scientist.

### Tayabas "Tapanan" Copra

In order to deal intelligently with the subject of Philippine copra improvement, it might be well to set forth the present status of the industry so far as it concerns Tayabas Province, where the agitation for the central seems to have originated, since Mr. Unson, a member of the committee, is from that province. Philippine copra consists of three different grades, "Sundried," "Fair," "Merchantable," known to the trade as "F.M." and "Laguna." Tayabas copra falls under the latter two headings as its copra generally is slightly better than Laguna, although for the most part it is not sundried but a product of the rude drying kiln or "Tapanan." It is to improve this product of the Tapanan that the Government is expected by the Tayabas growers to install expensive machinery and add one more to its already long list of paternalistic, perhaps mistaken, endeavors. One might almost call it a crime, for intervention in this matter of copra drying is so utterly unnecessary as to fall outside the category of mistakes and into that of pernicious activities.

In making copra the method followed in Tayabas as well as Laguna, and the other provinces where the climate is not favorable to sundrying, is to pick the nuts in a more or less unripe stage,

remove the tough fibrous husk by stabbing the nut on the point of a spear fixed firmly in the ground, after which the cocoanut is split in two and placed upon a bamboo grill some four or five feet above the ground. The source of heat for the drying is from the fibrous husks which, being imperfectly dry, emit considerably more smoke than heat, the result being such that the copra should rather be called preserved or smoked than dried, since the produce is quite liberally creosoted in the drying process. Not only is the appearance of the product against its bringing a high price in the markets, but its lower oil content makes it decidedly inferior to the sundried.

While this lack of oil, which is taken into account by discriminating buyers, comes in part from the inferiority of the cocoanut itself and is due to the lack of seed selection, the oil content might be materially raised if the Filipinos would let the nuts ripen on the tree before picking, instead of gathering, as now, immature cocoanuts which make a thin copra of inferior oil producing qualities.

### Should Regulate Raw Material

If the Philippine Government is paternalistic enough to invest its money in centrals for the improvement of Philippine products, it might go a step further in the case of copra, and tackle the evil at its root by passing laws forbidding the cocoanut growers from picking any but ripe cocoanuts and by establishing inspection centres through which copra would have to pass before being exported. At such centres any improperly made or poor quality copra could be thrown out and returned to the grower for whatever use he might see fit to put it, thus raising the quality of the crop and removing the unenviable reputation Philippine copra now holds.

Recent comments in the public press of Manila regarding the high quality of Samoan copra, and the higher price obtained by the growers there, show the necessity for such a law as the one detailed above. Some ten years ago Samoan copra was a drug on the market, and the most casual examination of prices in the great copra market in the world shows that it brought even less than Philippine copra, which latter now seems firmly entrenched at the bottom of the list. A law then was passed in German Samoa that forbade the grower from picking any nuts whatever for the manufacture of copra. Nuts that were picked must be eaten on the spot and no cocoanut that did not fall of its own accord from the tree was permitted to be made into copra. Not only was undergrade copra confiscated but the grower that attempted its sale was fined. In five years' operation of this law the quality of Samoan copra has been raised materially and the native by being protected against himself has been enabled to reap much greater profits than would have been the case under his former mistaken policy.

An examination of the detailed receipts of copra coming into the Manila market through Laguna and Tayabas will show that the moment the price goes high, the quality instantly decreases, owing to the grower endeavoring to seize the top of the market in as large a volume as he can, and to this end he picks every cocoanut that could by the most liberal construction be deemed ready to produce copra. A law such as that in force in Samoa is the first great need of the Filipino cocoanut planters.

As to the manufacture of copra, the installation of the central for a rapid drying of the nuts will have absolutely no effect unless the nuts, in the first place, be allowed to reach maturity and come to the full oil content before being picked. Even if this were done, there are many other problems to be solved before a central could be brought to economic operation in the drying of copra. Too much stress has always been placed on the appearance of copra and while the black creosoted product



FILIPINO STRIPPING HUSKS FROM COCOANUTS



TAPAHAN OR COPRA DRYING KILN

of the present Philippine tapahan may militate against its price, the copra buyer in the world's great markets of Marseilles, Hull and Hamburg buys almost entirely on oil content and low acidity, both these factors being taken into account.

The question at once arises as to whether the rapid drying of copra, as is proposed by the advisers of the central, will be an advantage or not, and in this connection the files of the Manila Merchant's Association contain evidence of Ceylon growers, which is entirely on the negative side of the proposition. One Ceylon grower, as a writer remembers his testimony, stated as follows:—

#### Looks Good but Lacks Oil

"With my drying plant, having brick flues and proper means for inducing a current of hot air to pass over the copra, I turned out perfect paper white copra in five hours, but soon began to receive complaints from my customers, the native oil millers, that they could not use my copra to advantage because of its low oil content. On chemical examination it was found that they were right; the rapid drying had driven off a much larger proportion of the oil than I had considered possible. The best copra I have seen is that produced by a grower who requires five days for the drying process, which he carries on entirely by the native method of grill-drying."

In view of the above testimony which will be found in the files of the Merchant's Association, embodied in a letter from the then Consul-General at Colombo, a central would appear a useless experiment at best if the Ceylon native can get better

copra by grill-drying than the European operator by an expensive installation. Why then should not the Filipino take a leaf from the book of the Ceylon native and revise his grill-drying method rather than ask the Government to waste its money in putting up a central drying plant?

#### Shells versus Husks as Fuel

The Singalese method differs in two respects from that of the Filipino. The first is that the bottom of the drying kiln is level, and uniformly five or six feet below the grill on which the nuts are placed. The second and all important one is that the Singalese burns shells instead of husks as a source of heat for his drying operations. These shells are the product of previous dryings, and are fitted into each other like cups, five rows, or ropes as they are called, being used at the start and three at the finish of the drying. The rows of shells are turned so that one row when lighted at the open end burns inward, while those on either side burn toward the ground of the grill. In this way a steady heat is maintained and there is a total absence of smoke so fatal to the appearance of the copra of the Laguna and Tayabas province, as made under the present Philippine practice.

It may be asked why, if proper drying of copra is so simple a matter, it has not been brought to the attention of the Philippine grower before, since it would seem that the obvious advantages and the small changes necessary would lead the Filipino instantly to seize upon the Ceylon method and make it his own? It has been tried, and full instructions were sent out to every grower having more than one thousand trees, not once, but three



SUN-DRYING COPRA IN SOUTHERN PHILIPPINES



LAGUNA COPRA SACKED FOR SHIPMENT

times, with the request that they advise the Merchants' Association as to whether they would try this plan or not. Out of several hundred growers thus circularised, not one replied, and the inference is that the Filipino does not want to do any work to improve his products, but is perfectly willing that the Government should waste its money in trying to do for him what he could and should do for himself.

### Cheaper Solution than Central

Not only were individual growers advised of this Ceylon method but an effort was made through the *Compania Gral. de Tabacos*, to have some individual grower try this method in the hopes that his success would make his neighbors revise their method of drying. Considerable correspondence was carried on by the manager of the *Tabacalera Co.*, with one of its agents in Laguna province, but his final report was that it was impossible to try the method in Laguna as the bottoms of the drying kilns were so uneven. From this it will appear that the Filipino is not willing to invest ten minutes labor with a pick axe and shovel in order to advance the selling price of his copra. In view of these facts, which should be in the files in the office of Vice Governor-General Martin, for he was sent a complete file of the Merchants' Association reports on copra shortly after his arrival in the Islands, the copra committee has information that points to a far cheaper solution of the copra problem than the building of a central.

From the foregoing it would seem that the plan to invest Government funds in a central for the drying of copra, is exceedingly ill advised since it would not raise the quality of cocoanuts nor would it be able to make any saving in time over the present method of drying. At best it would not turn out better copra than can be produced by the Ceylon method of burning shells instead of husks.

If the Philippine Government is in earnest regarding its plan to improve the copra industry, it should begin at the bottom of the industry instead of at the top, and endeavor to secure better raw material before trying to obtain a superior finished product, the homely adage respecting the production of "silk purses from sow's ears" being particularly applicable in the present instance.

It may be argued that the adoption of the Ceylon method of grill-drying would not improve the oil content of the copra. This is a problem on which the Bureau of Science doubtless is fully informed, since experiments undertaken by the late Dr. Paul Freer, and continued under the present director, Alvin C. Cox, are on record and would readily afford information as to the acidity of the Tayabas product prior to shipping and after receipt in the Marseilles market. Preliminary experiments pointed to a large increase in the percentage of acidity and a corresponding falling off in the oil content in Laguna copra in transit from the Philippines to Marseilles. Whether this acidity is due to the creosote introduced by the present smoking method, or whether its origin is in the bacteria of decomposition that flourish on imperfectly dried Manila copra, is a question that the Bureau of Science probably could answer.

There seems to be, then, only one advantage that might come from the operation of the copra central and that would lie in its ability to refuse immature and unripened nuts, when offered by the growers, thus bringing about a general rise in the percentage of mature nuts that were brought to the central. But what would be the difference in thus underhandedly curtailing the liberty of the Filipino farmer to produce bad copra and the more direct and less expensive method of passing a law similar to that which has been enforced in Samoa? In regard to the latter feature it might go a step further and compel the grower to burn shells instead of husks, since the destruction of the husk is an economic loss to the Filipinos who are continually importing coir carpeting made from Ceylon cocoanut fiber on the one side, and burning thousands of tons annually of the raw materials from which the self same carpeting is made. By passing a law forbidding the burning of this fiber, the Government would add at least \$400,000 a year to the revenue of the Philippine cocoanut

grower and the Government itself would gain, on a basis of a business tax of one per cent, some \$4,000 a year.

However, this matter of saving the fiber is a small item when compared with that of improving the copra, since a comparison of the Philippine product with that of Ceylon proves that the Singalese reaps so much higher a price for his product, that if the Filipino would make as good a copra, his additional income from this great Philippine export would average \$3,000,000 a year, or about 6 per cent of the total exports of the Islands. When the poverty of the Philippines is considered this sum appears well worth the effort necessary to save it, but the great question recurs as to whether the Filipino can be saved from himself and his product improved against his will. Save in matters of public order and sanitation, the American Government seems loath to say to the Filipino, "You must," preferring to let him work out his own economic salvation, aiding him only by good advice which more often than not is unheeded.

In these days of efficiency and scientific management it is a question whether an individual should be permitted to lower the standard of a country's export product as the Filipino certainly is persisting in doing by his present method of making copra. If poorly prepared copra were detrimental to his health, the Government would quickly step in to confiscate and destroy, but this matter concerns wealth, not health, and therefore the Government must keep its hands off. Yet the copra committee proposes to the Government that funds contributed to the public treasury by the whole people be put into a doubtful experiment for the few who are too slothful to do anything to aid themselves.

### Singalese Could Teach Filipino

If the Government really is in earnest regarding the improvement of copra, why should it not bring in an expert from Ceylon where copra is prepared under the same conditions as in the Philippines. This expert could construct a few drying kilns after the Ceylon pattern, dry the copra by Ceylon methods, and then see whether it would bring Ceylon prices. Five thousand pesos expended in such object lessons brought to the copra makers' doors might cause them to do for themselves the work that the Copra Committee proposes to do for them. The Filipino farmer is averse to change and has little or no initiative, yet shown the better way to do a thing he will take it up, and this matter of copra improvement would have the lever of additional income to move him from his present inertia. If one grower using a Ceylon grill should get even slightly higher prices, other growers would follow until all Tayabas would be using the new method. Such would be the direct effect and it would come about in much shorter time than might be expected by those who have tried to induce the Filipino to put in other improvements, as the change to the Ceylon method requires only a slight expenditure of muscle and practically no cash.

Equate the \$5,000 that the services of ten Ceylon experts would cost (they need not be highly paid Europeans but moderately intelligent Singalese), against the two or three hundred thousand pesos necessary for the central, and the practical advantage of the former becomes apparent to any one who knows how pinched for funds the Philippine Government now is. Taking into consideration also the fact that the central will not do the work expected of it, as it will have no advantage over the grill in saving of time, except at the expense of the oil in the copra, and that the copra it turns out will be no better from the oil millers' standpoint than that produced by the humble Ceylon grill, the construction of such an apparatus certainly would be a waste of public funds and its only possible justification would be in its power to compel the Filipino to let his cocoanuts ripen by refusing to accept the green ones he is sure to offer. When this same advantage can be secured by a stroke of the Executive pen on an Assembly Bill forbidding the making of copra from unripe nuts, the last argument in favor of the central vanishes. Were the drying of cocoanuts for copra by machinery a practical and thoroughly tested operation the case might be different and the Government might build one without the fear of having it left in idleness in the wilds of Tayabas, a monument to the ill-advised labors of the Copra Committee.

# THE FAR EASTERN REVIEW

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### GOVERNMENT IN CHINA

In the last issue of the FAR EASTERN REVIEW we published a brief record of the progress of the movement for the re-establishment of a monarchy in China up to the middle of August.

The Society of Peace, which must be credited with having initiated the public discussion of the advisableness of a re-establishment of monarchy, has been severely criticized by some sections of the Chinese Press, notably by those papers which are controlled by Chinese educated abroad, but the bulk of editorial opinion appears to be in favour of the change. The military governors of the Provinces and a great number of prominent civil officials have openly supported the movement, while the open opponents of note have been few. Mr. Liang Chi-chiao, as was only to be expected when the respective parts played by the President and by himself in the reform movement which culminated in the coup d'état of 1898 are remembered, has expressed himself as opposed to the reversion to monarchy. No other Chinese publicist of importance has come forward in defence of the republican system, though there is a tendency in some quarters to consider a change inopportune at the present time.

The foreign Press published in China, with the noteworthy exception of the *North China Daily News*, has questioned the advisableness of the change and has taken in some instances the view that the movement is due to personal ambition on the part of the President. The *North China Daily News* has regarded the question from a broader view-point, and has subjected it to sound constructive criticism. The Japanese papers for the greater part take the view that the question is one that concerns the Chinese alone, but several of them express the belief that China will be more likely to progress under a monarchy than under a system nominally republican.

The Council of State met in Peking on September 1. It was inevitable that the question that was engrossing public attention should come before this body, and considerable curiosity was evinced as to the attitude its members would adopt. When Vice-President Li Yuan-hung, the head of the Council, did not appear at its first meeting, a rumour was circulated that his absence was due to his disapproval of the monarchical movement. This rumour does not seem to have been based upon accurate knowledge. General Li Yuan-hung presided at the meeting held on September 6, at which a message from the President was read. We quote the official translation of this message textually:

"It is now four years since the people have entrusted me with the high office of President of the Chinese Republic. Moved by the fear that the task might be beyond my capacity, I have laboured, during the past troublous years, under much anxiety and misgiving and have looked forward to the time when I might be relieved of the pressing burdens of the State and permitted to retire from the same.

"But while I occupy my present position, it is my imperative duty and responsibility to protect the country and the people. It is my special duty to maintain the Republic as the existing form of government. Many citizens from the provinces have been lately petitioning the Tsan Cheng Yuan in its capacity of the Li Fa Yuan calling for a change of the form of the present government of the country. But this is incompatible with the position that I hold as President. Since, however, the office of the President is conferred by the people, the same must depend on the will of the people. And since the Tsan Cheng Yuan in its capacity of the Li Fa Yuan is an independent body and is therefore free from external interference, I ought not—strictly considered—to express or communicate any views (on the issue raised by the aforesaid petitioners) to the people of the country or to the Tsan Cheng Yuan in its capacity of the Li Fa Yuan. Inasmuch as any alteration in the form of government makes and involves an important and radical change in the Executive Power—and since I am the Chief of the Executive—I feel that it is impossible for me to observe silence, even though my speech may expose my motives to the risk of misinterpretation.

"In my opinion a change in the form of government carries with it such a momentous alteration in the manifold relations of the State that the same is a matter which demands and exacts the most careful and serious consideration. If the change is decided

on in too great a haste, grave obstacles will arise. The duty being mine to maintain the general situation, I have to state that I regard the proposed change as unsuitable to the circumstances of the country.

"As to the aforesaid petition of the citizens, it is obvious that the object of the petitioners is precisely to strengthen and secure the foundation of the State and to increase the prestige of the country; and it is not to be doubted that if the opinion of the majority of the people of the country is consulted, good and proper means will assuredly be found.

"Furthermore, it is not uncertain that a suitable and practicable law will be devised, if due consideration of the conditions of the country and careful thought and ripe discussion enter into the preparation of the Constitution of the Republic which is now being drafted.

"I commend this to your attention, gentlemen of the Tsan Cheng Yuan, in your capacity as acting members of the Li Fa Yuan."

In some quarters it was expected that this expression of the President's views would be followed by the dissolution of the Society of Peace and general discouragement on the part of the promoters of the movement. Why this opinion should have obtained it is difficult to conceive, as the President did not condemn the movement *per se*. His Excellency, while expressing his personal opinion that the change was unsuitable to the circumstances of the country, indicated that the question was one that could only be dealt with properly by an organ that was representative of the people. The interpretation to be put upon this is that the President holds that the people themselves must decide what system of government should be adopted, and inferentially that the President is prepared to submit to the will of the people, despite his own personal beliefs and predilections. A report, that appears to be well-founded, has gained currency, that the President by adopting the attitude he did probably saved the country from a *coup d'état*. It is said that the supporters of the movement for the re-establishment of a monarchy were much more numerous and more powerful than was generally believed, and that they included practically all the military officials and a large number of the civil officials.

The demand for a reversion to the monarchical system was, therefore, supported by such a powerful and influential body of opinion that the President could not meet the situation by an emphatic *non possumus*. The constitutional course to adopt in such circumstances was obviously to remit the question to a body representative of the people, and if it were found that the majority really wanted the change it would be clearly the duty of the President to allow their desire to become effective. The President, owing to his firm control of the situation, was able to compel the advocates of the monarchical system to await an authoritative expression of popular opinion through a representative organ.

A regrettable incident in Shanghai has shown the irreconcilable character of some opponents to the movement. A bomb was thrown into the office of a newspaper that had recently been established to support the Society of Peace, and several people were killed. No doubt the better elements among the party that opposes any change in the form of government deprecate such outrages, but their cause is bound to suffer by this ready reversion to the "bomb and dagger" argument.

The Commission that is drafting the Constitution is continuing its labours. The preliminary elections for the Kuoming Hui-I, or Citizens' Convention, will take place in the middle of October, the final elections will be concluded by November 20, and the Convention will assemble in January next, if not earlier. Its first task will be to consider the draft Constitution, and in this connection it will be called upon to declare either in favour of a continuance of the republican form of government or the establishment of a constitutional monarchy. In most well-informed quarters it is believed that the majority will declare for a constitutional monarchy.

As a result of consideration of the petitions in favour of a Monarchy the State Council, on September 20, submitted the following suggestion to the President: "The Council has received from different bodies and persons throughout the country the

first and second series of petitions in regard to the form of the State, amounting in all to eighty-two petitions. These petitions have been referred to a Committee for examination. On the report of the Committee, a meeting of the Council has been held and the matter discussed. It has been unanimously resolved that the form of the state is a matter of paramount importance. The intention and purpose of the petitions are no other than to strengthen the foundation of the state and to increase the prestige of the country. When the Constitution comes to be drafted, no doubt careful consideration will be given to the popular desire of the whole country for permanent peace and welfare and after mature thought and discussion, a good constitution will be framed. But the form of the state is an important constitutional question the decision of which rests with the National Convention. In accordance with Clause 7 of Article 31 of the Constitutional Compact this Council submits the suggestion to the Government that the President be requested to accelerate the convoking of the National Convention within this year or devise other proper and adequate means to consult the will of the people, with the view that a fundamental solution be found so that the general situation may be settled and the minds of the people be set at ease. The 82 petitions are sent herewith."

In reply to this suggestion President Yuan Shih-kai replied informing the Tsanchengyuan that as the power of finally passing the Constitution rests with the National Convention the question must be carefully discussed and solved without haste. The final election of the Convention will be completed on November 20, which has already been announced by Mandate. After the completion of the electoral affairs the Convention will be convoked as soon as possible in order to obtain an accurate and proper interpretation of the will of the people. The Bureau for the Convocation of the National Convention has been instructed to take note of the communication from the Tsanchengyuan and to hasten the completion of the arrangements for the election, which will take place in accordance with the fixed dates.

## THE PEOPLE'S CONVENTION

Preparations for the election of the People's Convention (Kuo Ming Hui-I) are now proceeding, and it is expected that the primaries will be concluded about the middle of October, while the finals will be completed by November 20. Unless an earlier date is arranged the elected members, of whom there will be about 400, will meet in Peking, in the old National Council buildings, in January, 1916. This body is being convened simply to deal with the proposed permanent constitution which is now being drafted by a Committee of the State Council, and consequently it is the organization which will have most to say as to the future form of Government. Already the State Council designates it the one to determine the consideration of the question of the restoration of the monarchy, and no doubt the whole matter will be thrashed out by it.

The members will be elected under the regulations provided for the election of members for the proposed Li Fa Yuan (or National Assembly). The greatest care is to be exercised to prevent any fraud at the ballot box. Every qualified voter has to be vouched for, and may not enter a booth without a special ticket, or may not leave a booth without possession of another special ticket. Every balloting paper has to be enclosed by the voter in an envelope and deposited in the balloting box by him. He then has to sign and seal the register. Two scrutineers are to sit beside every ballot box and take the number of every vote deposited. At the conclusion of the voting the box is to be sealed under the auspices of special officials and only opened in the presence of the public on the day fixed for the purpose. When the ballot box is opened one official is to take the paper from the box, another is to read out the name, and at least four others are to check the name in the balloting book.

As has been explained in a previous issue of this journal the regulations for the Li Fa Yuan provide that the members shall be partly elected and partly appointed. Every Hsien, or district, will elect ten candidates who are to be nominated by the

Magistrates from among the natives of the district. Five of them are to be from among the wealthiest persons in the district, while the other five are to be nominated from among those who have had long administrative experience, a knowledge of law, or are scholars. Or failing sufficient possessing these qualifications the candidates are to be selected from among the propertied class. The ten candidates so selected by a district are to assemble in the District city and there choose from among themselves one elector, who is ultimately to proceed to the Provincial capital and there, with others similarly chosen from other districts, elect as members of the Citizen's Convention one-tenth of their number. The President retains the right to appoint, in addition to the elected members, one-tenth of the whole body, while each Provincial Governor will be entitled to appoint two members.

It will be thus seen that the Convention will be drawn from men of years and experience in Chinese manners and customs. There will be none of the energetic and inexperienced youthfulness which characterised the first parliamentary bodies of the Republic, and by eliminating this element the President and his advisers believe that they will be able to obtain more seasoned and more practical reasoning. There are many, of course, who will regret to see the absence of the soberer element of the young foreign-educated Chinese, but the deplorable fiasco of the first parliament is what has led to their exclusion, and they must be willing to suffer for the sins of the radical faction while some opportunity is given others to try and place the internal affairs of this country upon the basis they should occupy.

### CHINA'S NEED OF ROADS

It has been said with much truth that a nation's progress can be gauged by the extent and degree of perfection of its means of transportation. The application of this test to China shows that progress has been very slow, in fact it may be said that, prior to the introduction of railways, there was retrogression. While it is not literally true that there are no roads in China, it is no exaggeration to say that there are no good roads outside the boundaries of foreign settlements and leased territory. The economic losses to the Chinese people due to the difficulty of transportation are simply incalculable. Moreover enormous loss of life is attributable to the same cause. Owing to the chronic neglect of roads and canals the failure of crops from drought or flood in one locality cannot be relieved by the surplus supplies of other regions. Millions of lives have been lost simply because the authorities have not provided adequate means of communication, which could have been furnished at a comparatively small cost.

The one sign of progress, as has already been suggested, is the construction of railways. But the benefit that the country derives from its railways is greatly discounted by the lack of facilities for the conveyance of produce and goods to and from the stations. If good roads radiated from each important railway centre so as to enable motor lorries and other vehicles of modern type to feed the railways, the latter would be of immeasurably greater benefit to the government and the people.

There is a certain amount of grim humour in the recollection that at one time China was held up to the world as a country in which most scrupulous attention was paid to the upkeep of roads and canals. Dr. Adam Smith refers to this in the "Wealth of Nations," published in 1776, though it is to be noticed that Dr. Smith regarded China's alleged pre-eminence in this regard with doubt. He wrote:—

"In China, and in several other governments of Asia, the executive power charges itself both with the reparation of the high roads, and with the maintenance of the navigable canals. In the instructions which are given to the governor of each province, those objects, it is said, are constantly recommended to him, and the judgment which the court forms of his conduct is very much regulated by the attention which he appeared to have paid to this part of his instructions. This branch of public police, accordingly, is said to be very much attended to in all

those countries, but particularly in China, where the high roads, and still more the navigable canals, it is pretended, exceed very much everything of the same kind which is known in Europe. The accounts of those works, however, which have been transmitted to Europe, have generally been drawn up by weak and wondering travellers; frequently by stupid and lying missionaries. If they had been examined by more intelligent eyes, and if the accounts of them had been reported by more faithful witnesses, they would not, perhaps, appear to be so wonderful. The account which Bernier gives of some works of this kind in Indostan falls very much short of what had been reported of them by other travellers more disposed to the marvellous than he was. It may too, perhaps, be in those countries, as it is in France, where the great roads, the great communications, which are likely to be the subjects of conversation at the court and in the capital, are attended to, and all the rest neglected. In China, besides, in Indostan, and in several other governments of Asia, the revenue of the sovereign arises almost altogether from a land tax or landrent, which rises or falls with the rise and fall of the annual produce of the land. The great interest of the sovereign, therefore his revenue, is in such countries necessarily and immediately connected with the cultivation of the land, with the greatness of its produce, and with the value of the produce. But in order to render that produce both as great and as valuable as possible, it is necessary to procure to it as extensive a market as possible, and consequently to establish the freest, and easiest, and the least expensive communication between all the different parts of the country; which can be done only by means of the best roads and best navigable canals."

It is, of course, true that at one time China did possess courier roads which were adequate for the requirements of those days, and canals which were kept in a reasonable state of repair. That, unfortunately, is no longer the case, and in a new edition of a standard work on China\* published a few years ago the humiliating admission was made:—

"In no civilized country of the world are communications so difficult as in China, . . . everything is still to be done in regard to good roads and the upkeep of canals."

In the same book appear the following significant statements:—Kansu.—Difficulty of conveyance and communication is the greatest hindrance of Kansu; Shansi.—The communications are difficult through lack of good roads; Kiangsu.—The land routes, or rather pathways, are little kept in good repair; Kweichow.—All transport has to be done by carriers or pack animals; Kwangsi.—The land routes are badly kept up and are nothing more than unbeaten tracks.

There are said to be twenty-one courier roads in China, but there are only six of importance. These run from Peking to Mukden; Peking to Chengtufu (Szechuen) via Taiyuanfu and Singanfu; Peking to Yunnanfu via Weihwifu, Kaifengfu, Nanyangfu, Siangyangfu, Changtehfu, Yuenchowfu and Kweiyangfu; Peking to Kweilinfu (Kwangsi) via Weihwui, Hankow and Changsha; Peking to Canton via Nanchangfu; Peking to Foochow (Fukien) via Chinkiangfu and Hangchow. These roads have been allowed to fall into utter disrepair, and they are almost impassable, especially in the rainy season. Some of them are paved, but the paving through neglect has become more of a hindrance than a help.

The deplorable state of things extant in China in regard to facilities for transportation could easily be remedied. In Korea the highways were neglected as they have been—and are—in China. The Japanese, when they took possession of the country, immediately undertook the work of facilitating means of transport. The following extract from the "Annual Report on Reforms and Progress in Korea" for 1912-13 shows what has been accomplished.—

"The general plan of constructing 23 State roads, measuring over 587 ri,† at the cost of 10,000,000 yen, which is to be carried out in five consecutive years beginning with the fiscal year 1911, was fully stated in the previous report. Most of

\* Richard's Comprehensive Geography of the Chinese Empire.

† A ri is 2.4 miles.

the time in the year 1911 being spent in preliminary preparations, actual work done in the same fiscal year did not amount to more than 18 per cent. of that allotted for the fiscal year 1911, amounting to 1,606,900 yen, and the fund for the fiscal year 1912 amounting to 1,305,000 yen, road construction was steadily carried on during the fiscal year 1912, and at the end of the year there was left a balance of 630,000 yen only, which sum is to be transferred to the account for the year following.

"Of the State road construction planned after the annexation as a five years' consecutive work, as much as 117.29 ri was completed by the end of the fiscal year 1912. Should there be added to this the construction prior to the annexation, the total length of State roads constructed by the Central Government reaches 325 ri 35 cho.

"As mentioned in the section dealing with financial readjustment, the fund provided for public works for the year 1913 being held over for one year, the original State roads construction plan of five years' consecutive work was extended to one of six years' consecutive work, as shown in the following table.—

Description	Estimates for Consecutive Works	1911	1912	1913	1914	1915	1916
	yen	yen	yen	yen	yen	yen	yen
Construction	8,700,000	1,740,000	1,305,000	1,740,000	1,305,000	1,305,000	1,305,000
Office Expenses	1,300,000	260,000	195,000	260,000	195,000	195,000	195,000
Total	10,000,000	2,000,000	1,500,000	2,000,000	1,500,000	1,500,000	1,500,000

"While the construction of new highways is in progress, the maintenance and repair of constructed roads ought equally to be carried out. To effect this in the case of State roads aggregating 300 ri constructed since the Protectorate regime, 100,000 yen was apportioned in the budget for the fiscal year 1912, and 60,000 yen of that sum was given to Provincial Governments, which were required to participate in repairing State roads, while 40,000 yen was designated for repairs directly conducted by the Central Government.

"The Road Regulations promulgated in April, 1911, generally provide that the maintenance and repair of first and second class roads shall be undertaken by the General Government, third and fourth class by Local Government, and others, i.e. village roads, by village communities. Yet first and second class roads or State roads having close relations with localities, the Provincial Governments were, in accordance with the Government-General's Instruction No. 60 issued in May, 1912, made responsible for the maintenance and repair of State roads in their respective jurisdictions, except those parts requiring important and expensive engineering works, and the expenses incurred in repairing such may be partly defrayed by the Central Government and partly by labour contribution which, in accordance with ancient custom, may be made use of in effecting such work.

"Road construction by the Central Government only being still inadequate for the expansion of transportation facilities, construction of local roads by Local Governments has been encouraged especially since the annexation. Local roads were constructed not only by the Provincial Governments with money defrayed from the Local Expenses Funds, or with subsidies given by the Central Government, but by Prefectural and District Magistracies with contributed labour, or with subsidies given by the Provincial Government. The custom of *Puyok*, contribution of labour for road construction or other public works, has been in existence for ages past. This system of labour contribution became later on greatly abused, and gradually most of the *vangban*, the literati, and influential people were exempted from the service, until finally those called upon for such service were the small farmers only. As this system in itself is good, of great use in road construction, it has been adopted to help on the work. However, in order to distribute the burden equally, the authorities concerned call upon Koreans and Japanese alike, whether rich or poor, for labour contribution, allowing those not capable of contributing labour to liquidate the demand by the payment of a sum of money corresponding to the amount of labour required of them.

"Local roads repaired or constructed throughout the Peninsular during the year 1912 aggregated 74.20 ri and cost 547,450 yen of which 299,996 yen was defrayed from the State Treasury and the remainder from the Special Expenses Fund for Local Needs.

"The following table shows the road construction by localities from the year of annexation up to the end of December, 1912.

September, 1910—December, 1912.

Class of Road	Length constructed by State Subsidies.	Length constructed by Local Ex-penses Fund.	Length constructed by Labour Contributed.	Total.
	Ri	Ri	Ri	Ri
Streets .. ..	3.33	1.01		4.34
First Class Roads	6.06	4.01	112.04	122.12
Second Class Roads	76.17	35.29	346.22	458.33
Third Class Roads	55.01	175.72	482.29	713.07
Other Roads ..	5.01	12.11	781.04	798.18
Total ..	146.25	228.20	1,722.25	2,097.55

But it is not only in Korea that the supreme importance of providing good roads is recognised. In the Philippines, in Indo-China, in Netherlands-India, in the Straits Settlements and the Federated Malay States the highways are excellently constructed and are kept in perfect repair. Further afield, in Europe, America, Africa and Australia, the closest attention is paid to the betterment of communications. In many instances in America of late years the people, of their own volition, have turned out to work together on a prearranged day to improve the roads, and the Governor of a State and other high officials might be seen setting an excellent example by engaging in unaccustomed and arduous work for the public benefit. In other countries also the "Good Roads Movement" receives the support it deserves, and a healthy rivalry is created between different districts to provide the best highways.

The improvement of the roads in China is a work that can be proceeded with without any delay, and indirectly the improvements would pay for themselves many times over. An example of what can be done for street improvement has recently been given in Peking and it would be easily possible at reasonable cost to construct serviceable inter-provincial roads. The services of experts who have knowledge of road construction in the Far East should be secured and a beginning made upon the roads which feed, or rather should feed the railways. This is perhaps a more important reform than any other awaiting attention in China, and the government should lose no time in making a beginning. It might be possible to devise means, if lack of funds be the obstacle, whereby foreign financial assistance and expert advice could be secured. But, in any event, the government will better justify its claim that it exists for the benefit of the people if it devotes immediate attention to this matter which has been so shamefully neglected in the past. The people of the districts which would benefit would probably in many cases be only too glad to give their services either gratis or for a minimum wage, and in places where this expedient could not be adopted useful employment could be found for prisoners, for disbanded troops, or for the tens of thousands who are unemployed.

## CHINESE MANUFACTORIES

Early this month an exhibition of articles manufactured in the city of Peking was held at the Temple of Agriculture, Peking, under the auspices of the Peking Municipal Council. As a prelude to the exhibition of the products of all China, which is to be held later, it was a great success, and wares were displayed which the casual foreign observer of city shops might be excused for failing to know were produced in the capital. Utilitarianism and art shouldered it cheek by jowl, but it must be confessed that the workmanship in the art

objects was far superior to that shown in the numerous articles designed to ameliorate the conditions of life. A fairly wide range of products was covered: utensils for the school, from chalk and pencils to drawing instruments; flour and foodstuffs; preserved fruits and wines, beer and cordial waters; clothes Chinese and foreign; furniture and stoves; working tools and saddlery; farm implements and looms; exquisite lacquer ware, silver, jade, cloisonne, silks, and wood carving of splendid quality. All were well arranged for inspection, and during the ten days the exhibition was open about ten thousand people were daily attracted. The Municipal Council was interested in the exhibition only because it was an initial attempt and the manufactures required assistance in carrying out details of collection and arrangement of exhibits. Mr. Kungpa T. King, of the Ministry of the Interior, took a leading part in organizing the exhibition. Mr. Chang Yu-shun attended to the collections, Mr. Wang Yang-ping was the Secretary and Mr. Chen-kuo saw to the details in the grounds. Considering that only twenty days were devoted to the collection of exhibits the result was surprisingly successful.

One of the outstanding features of the exhibition was the evidence afforded of the effort being made on the part of certain Chinese to produce articles of western character. That the means of production are of a crude nature is made obvious by the nature of the finished article, but realising that those who essayed to imitate the creations of other nationals worked under the greatest difficulties the results of their enterprise are creditable. When we speak of imitating the creations of other nationals we do not mean in the direction of infringing trade marks. We saw only one exhibit which actually infringed a trade mark, and that was a gummed paper for catching flies; and we saw only one other which bore a designed semblance to another well known product—a sauce. The label was of the same colour and design as Lee and Perrin's product, but it was not an attempt at copying the trade mark. Apart from these two exhibits there was nothing to complain of and the other foreign-copied articles displayed were not of a protected character. That they were made so well under great difficulties indicates that they could be properly produced with machinery, and one good this and other exhibitions might do is to force upon responsible Chinese recognition of the great necessity and the great demand that exists for the introduction of modern industrial machinery and for the organized development of an industrial policy. It has been long known that the Chinese have a peculiar talent for mechanical work, and it is regrettable that the only ones who have so far employed it to any extent are the foreigners in the Treaty Ports or elsewhere where industries have been built up under foreign direction and with foreign capital. The Chinese Government might well devote itself to the problem of utilizing this tremendous latent asset, and it is sincerely to be hoped that the excellent work recently inaugurated by the Minister of Agriculture, Commerce and Industry will eventually develop into a movement for the widespread introduction of modern industrial methods. The salvation of China depends upon this as much as upon anything else.

### THE ENCOURAGEMENT OF INDUSTRY

The bestowal of congratulatory tablets by the Chinese Government upon certain industrial undertakings would seem to be convincing evidence that at last there is an awakening in favour of industrial expansion. Some time ago the Ministry of Agriculture, Industry and Commerce recommended the President to confer tablets upon nine industrial concerns, *pour encourager les autres*, and about the middle of this month the same Ministry recommended a further seven concerns for similar recognition. The President accordingly approved the bestowal of tablets upon the Commercial Press of Shanghai, the Chunghua Book Company of Shanghai, the Hanyang Tobacco Company of Hongkong, the Yangtze Engineering Company of Hankow, the Taifoong Canning Company of Shanghai, the Silk Weaving Guild of Hangchow, and the Hua An Life Insurance Company of Shanghai, "as an encouragement to merchants."

That the Central Government should thus officially display an interest in commercial and industrial development in China will be of considerable satisfaction to those who have embarked their capital in enterprises, and it will be, no doubt, accepted as a precursor of legislation designed to protect all who may incline to enter the industrial field. Legislation with this object in view is badly needed. Although much progress has been made in China in the preparation of the public mind to accept foreign inventions, such as railways and machinery, no-corresponding advancement has been made in fitting the official mind throughout the interior to regard a new industry as something else than a freshly created source of taxation. Many officials in the country still cling to the obnoxious idea that any civilian who devises a new method of producing wealth is fair game for the tax collector, and it is regrettable that in many cases they have been able to impose their wills upon the people under their jurisdiction to the detriment of development and the damage of individual interests. Though it is acknowledged that any widespread reform is difficult in China it is competent for us to draw the attention of the Government to the necessity of extending their recognition of industrial effort to the vouchsafing of security to those outside of the Treaty ports who are wishful of establishing new industries in various provinces. There are successful industries in some places fully worthy of tablets, but there are many others equally worthy of flattering epitaphs that have gone to their graves "unknelled, uncoffined and unknown" after impotent and vain struggles against the oppression of provincial officials. Well might the Government investigate the conditions of industries throughout the country with the object of alleviating the disabilities under which they labour, and we commend to the attention of the Minister the desirability of removing completely the right which time-honoured custom has conferred upon District Magistrates and others to levy imposts upon industries now existing or upon those that are endeavouring to get their heads above the water. A step in this direction will be received by the people as a tremendous boon, and will do more to put the nation upon its feet than any multitude of rules and regulations that might be devised and issued but which are seldom adhered to.

### AFFORESTATION IN CHINA

It will be gratifying to those who have long advocated the adoption by the Peking Government of a consistent policy of afforestation throughout China to learn that the Minister of Agriculture, Industry and Commerce has seriously taken up this question. For some time he has been considering the details of a general scheme of afforestation, and we understand that not only is the employment of an expert contemplated, but that arrangements have been made to establish bureaux in various parts of the country for the introduction and carrying on of experimental work. Guided by efficient talent the scheme should quickly prosper and should prove within a few years to be of lasting benefit to the denuded parts of the country. China is in such a lamentable state as the result of thoughtless denudation of timber in years long since past that any official who can have belts of trees planted will rear for himself a sufficient monument even if nothing else is done to recognise his labours. That the present Minister of Agriculture, Industry and Commerce is fully alive to the grave necessity of extensive tree planting is indicated by his activities and by the following message of recognition which he recently indited to the Dean of the College of Agriculture and Forestry in the University of Nanking:

The University of Nanking has been in existence for a number of years. Its well-known success has proved it to be a beacon light of education.

While we fully admire the benefits derived by students from the studies generally taught in this University, the Department which stands out as being pre-eminently practical and useful is, in our estimation, the College of Agriculture and School of Forestry. Knowing its careful organisation and practical methods of training, the Governors of Anhui, Shantung and Szechuan have sent students to this Department to study Agriculture and Forestry and are paying all their expenses.

As a further recognition of the value of this Department, the Ministry of Agriculture and Commerce has arranged to send twenty-four of our students from Peking to study forestry at the University of Nanking.

The usefulness of the Agricultural Department of the University of Nanking has not been limited to ordinary studies and practice. Through its initiative and energy, the Colonization Association was organized and is being directed. The object of the Colonisation Association is to assist destitute people to cultivate vacant lands; and during the past two years, in the face of drought and locusts, it has succeeded in doing no little good. China, being an agricultural country, is thankful for such assistance.

The location of the University of Nanking on the great waterway between the North and South makes it a convenient centre in which to investigate rinderpest and other cattle diseases, and to disseminate among farmers usefull scientific knowledge of how to treat these destructive plagues. In consideration of the good work which the University has already done, the Ministry of Agriculture and Commerce has resolved to

co-operate with the University directors and to give all the assistance possible if the University establishes an institute for the purpose of developing practical scientific work on these lines.

The University has been built up on private donations. It depends for its maintenance and development on the gifts of Chinese and American philanthropists. I sincerely hope that all may bear this fact in mind and give liberally to the support of an institution that is rendering such valuable services. May Heaven prosper the work and those supporting it; the latter will have the satisfaction of knowing that they are contributing to a work of extreme value to our country.

CHOW TZE-CHI.

Minister of Agriculture and  
Commerce, in the Republic of China.

Peking, August 12, 1915.

## COMMERCE AND INDUSTRY OF CHOSEN (KOREA)

Financial and industrial circles in Chosen in 1914 were somewhat affected by the depressed conditions prevailing in Japan and throughout the world. The rice crop, the foundation of the country's wealth, was 60,309,468 bushels (compared with 50,013,089 bushels in 1913), and was exported in increased quantities, notwithstanding that the price fell 50 per cent. Other crops—beans, ginseng, cotton, and tobacco—were good, though prices were low. Mining made a steady development, showing slightly increased outputs of gold, iron, and coal. Some lines of manufacturing industries, such as cigarettes, canned goods, and leather manufactures, were also encouraging, as a result of the increased demand created by the war and of the Government's policy of promoting home industries.

The collection of revenues and taxes was satisfactory, notwithstanding the increased rates and the new taxes put into operation. The banks just about held their own, the Bank of Chosen (semi-Government) declaring a dividend of 7 per cent.

The deposits in postal savings banks at the end of December, 1914, were about \$2,900,000, a slight gain, and the tendency toward steady increase still continues.

Provision made by the Government General for the establishment of an increased number of people's banks, to improve local conditions among farmers, led to 210 such banks being inaugurated with a capital of over \$1,500,000, of which the Government provides \$1,150,000.

The yield of rice in 1914 was a "bumper crop," and the demand in Japan for Korean rice was brisk, while experimental shipments of Korean rice were made through Kobe to Portland,

Ore. According to official estimates published in September the bean crops in Chosen last year were expected to amount to 14,081,212 bushels, showing an increase of 2,106,740 bushels, or 17.5 per cent, as compared with the preceding year. The soya bean is second in the agricultural products of Chosen, between 2,500,000 and 3,000,000 bushels, valued at between \$1,500,000 and \$2,000,000, being exported annually to Japan.

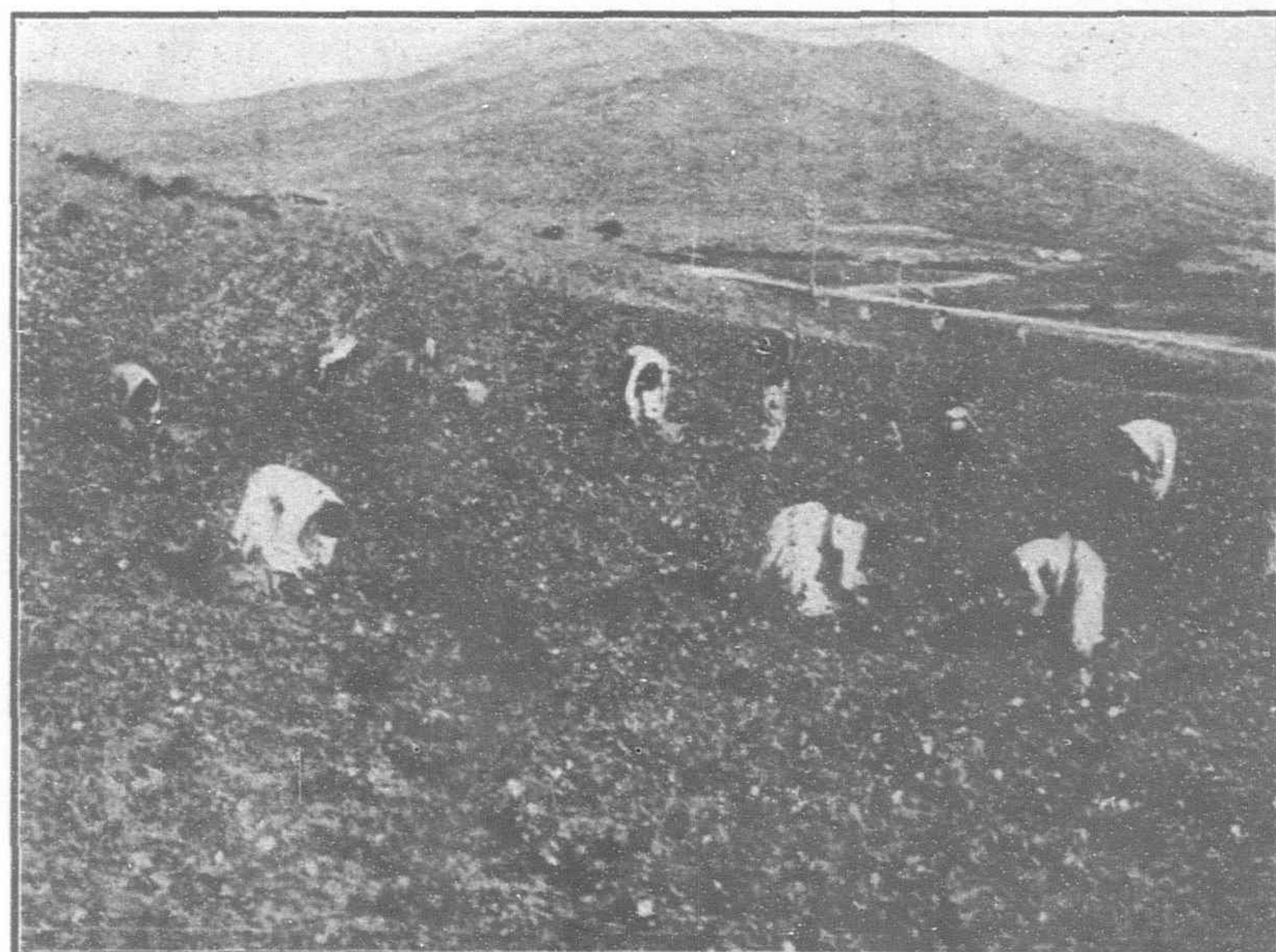
The importation of yellow tobacco leaves from America by local manufacturers of cigarettes amounts to about 828,000 pounds, and the Government General has been carrying on experimental plantations of American tobacco in Chosen. Both climate and soil are well suited for its cultivation and the area devoted to it is steadily on the increase. Last year it increased to 294 acres, with a crop weighing 331,200 pounds. As the tobacco produced on an acre of ground ranges in value from \$40 to \$80 many farmers are anxious to undertake its cultivation. Fearing overproduction, the authorities will restrict the area and it is reported that of 1,225 acres asking permission only 490 acres will be put in tobacco in 1915.

### Yield, Prices, and Exports of Silk

On account of the great quantity of spring silkworm eggs hatched, and of the favorable weather experienced, the quantity of cocoons obtained during 1914 was unprecedentedly great, reaching 198,400 bushels for all of Chosen. This represents an increase of about 30 per cent. Prices were from \$3.80 to \$5.80 per bushel. Exports to Japan during 1914 amounted to about 39,680 bushels, valued at \$149,400, an increase of 50 per cent in quantity and 260 per cent in value.



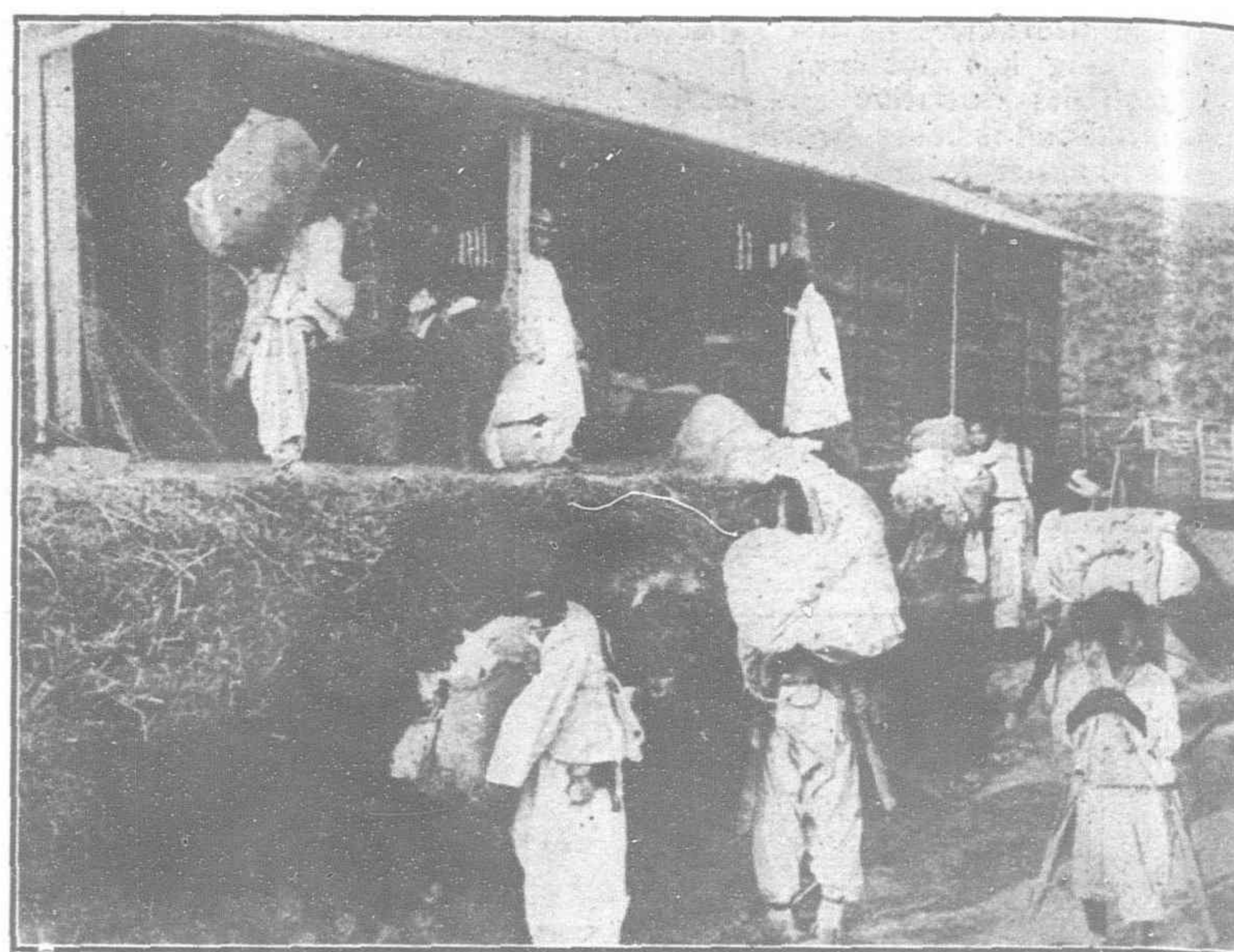
CHOSEN'S NEW INDUSTRY—UPLAND COTTON FIELD



KOREANS GATHERING CROP OF UPLAND COTTON



KOREAN WOMAN DRYING RAW COTTON IN THE SUN



PURCHASING RAW COTTON FROM KOREAN FARMERS

Ginseng farms in 1914 aggregated 161,906 kan (1 kan=about 4 square yards) producing 280,166 pounds, of which the Government purchased 75,969 pounds of the best at \$2.24 Gold per pound, for the manufacture of red ginseng. In comparison with six years' average annual production, an increase of 33,675 pounds has resulted from the Government measures for the prevention of disease. The roots harvested in 1914 were planted in 1909.

The total area devoted to cotton of the upland species during 1914 was about 51,450 acres, the crop obtained being estimated at 28,000,000 pounds in weight.

As a result of the encouragement given to farmers to plant this grade of cotton, the area is increasing and it is estimated that during 1915 upland cotton land will reach 83,300 acres, an increase of 31,850 acres over the preceding year.

The strong demand for cattle in Russia caused an experimental shipment of 1,000 head of Korean cattle to Vladivostok and the beginning of negotiations for 20,000 additional head, which naturally gave a strong impetus to the breeding of cattle in Chosen. Protection given to the property rights of individuals and the rise in value of agricultural products caused a steady increase in the reclamation of waste lands by Japanese and Koreans. During 1914, 595 applications, covering 106,283 acres, were filed with the authorities. There are 180,930 acres of waste land throughout the peninsula, 99,303 acres being State owned and 81,627 privately owned.

### Canned Goods and Salt Industries

The preparation of preserved goods is one of the new industries introduced by the Japanese since the annexation. According to the official returns for 1914, Chosen produced 137,810 dozen cans of marine products, worth \$159,913; fruits and vegetables, worth \$8,733; and bottled provisions, worth \$981.

The manufacture of salt at the Government salt pans at Kwangyang and at Chuan ceased on October 30, 1914. The result was not satisfactory, the total output reaching only 85 per cent of the estimated output—74,573,333 pounds. This poor result was attributed primarily to the fact that rainy weather prevailed at Kwangyang for a long period. This failure of the Kwangyang salt pans offset the good results obtained at the Chuan pans. The output from Kwangyang for 1914 was 54,591,227 pounds (81.3 per cent of the estimate) and from Chuan 9,092,053 pounds (122.4 per cent of the estimate). New season estimates call for a total of 90,520,000 pounds during 1915, an increase of 26,826,720 pounds. In this connection it is of interest to note that an order has been placed with the Government General of Chosen for some 10,000,000 pounds of salt for use in the Russian maritime provinces due to suspension of imports from one of the belligerent countries.

Last year 999,646 gallons of sake, 5,128,962 gallons of distilled spirits, 1,231 gallons of liquor prepared from fruit juices, and 28,851,538 gallons of miscellaneous liquors, amounting in value to \$6,130,368, were produced in Chosen.



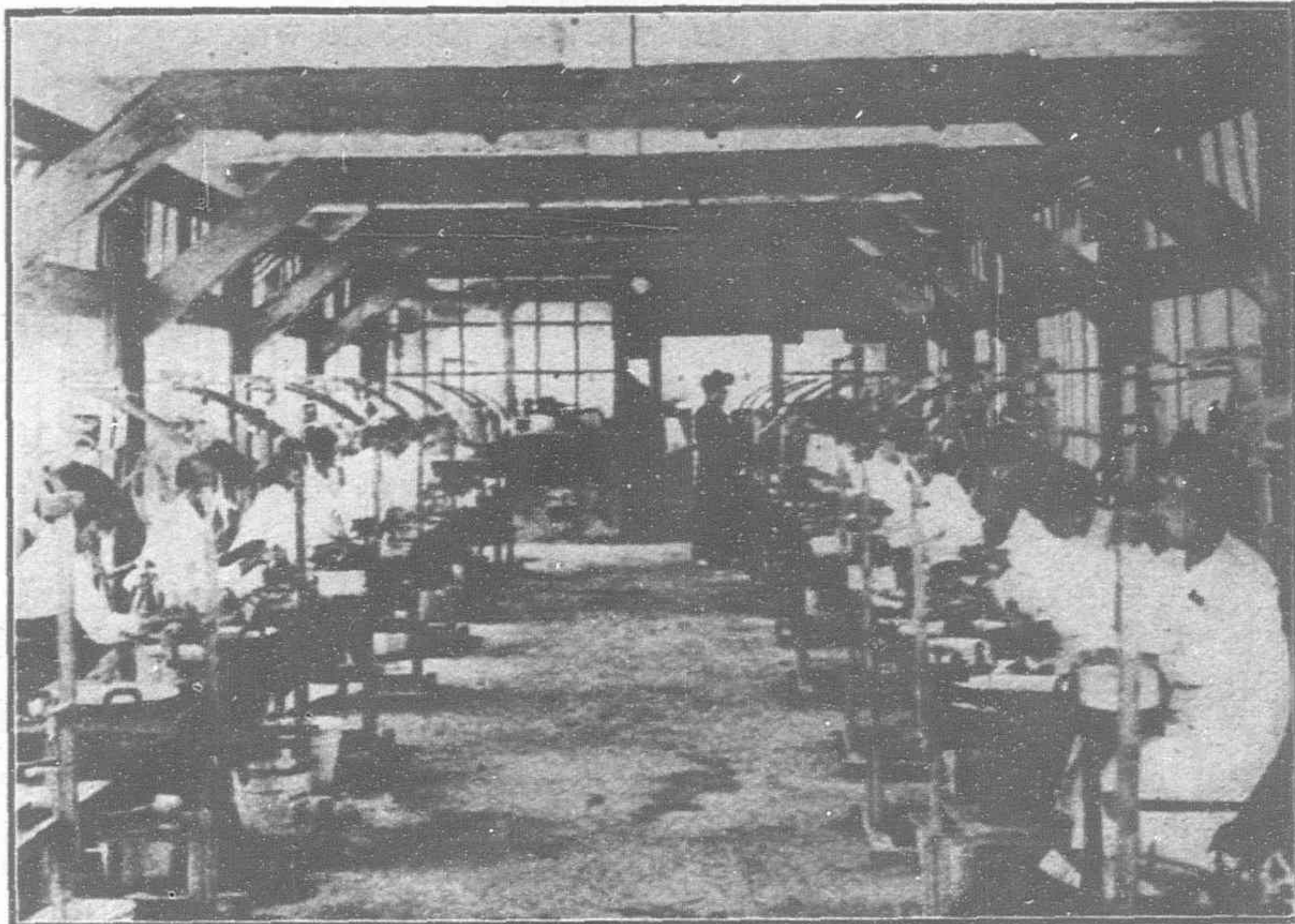
MICROSCOPIC EXAMINATION OF KOREAN SILKMOTHS



TENDING CATERPILLARS DESTINED TO BECOME MOTHS



SILK-REELING IN KOREAN SERICULTURE SCHOOL

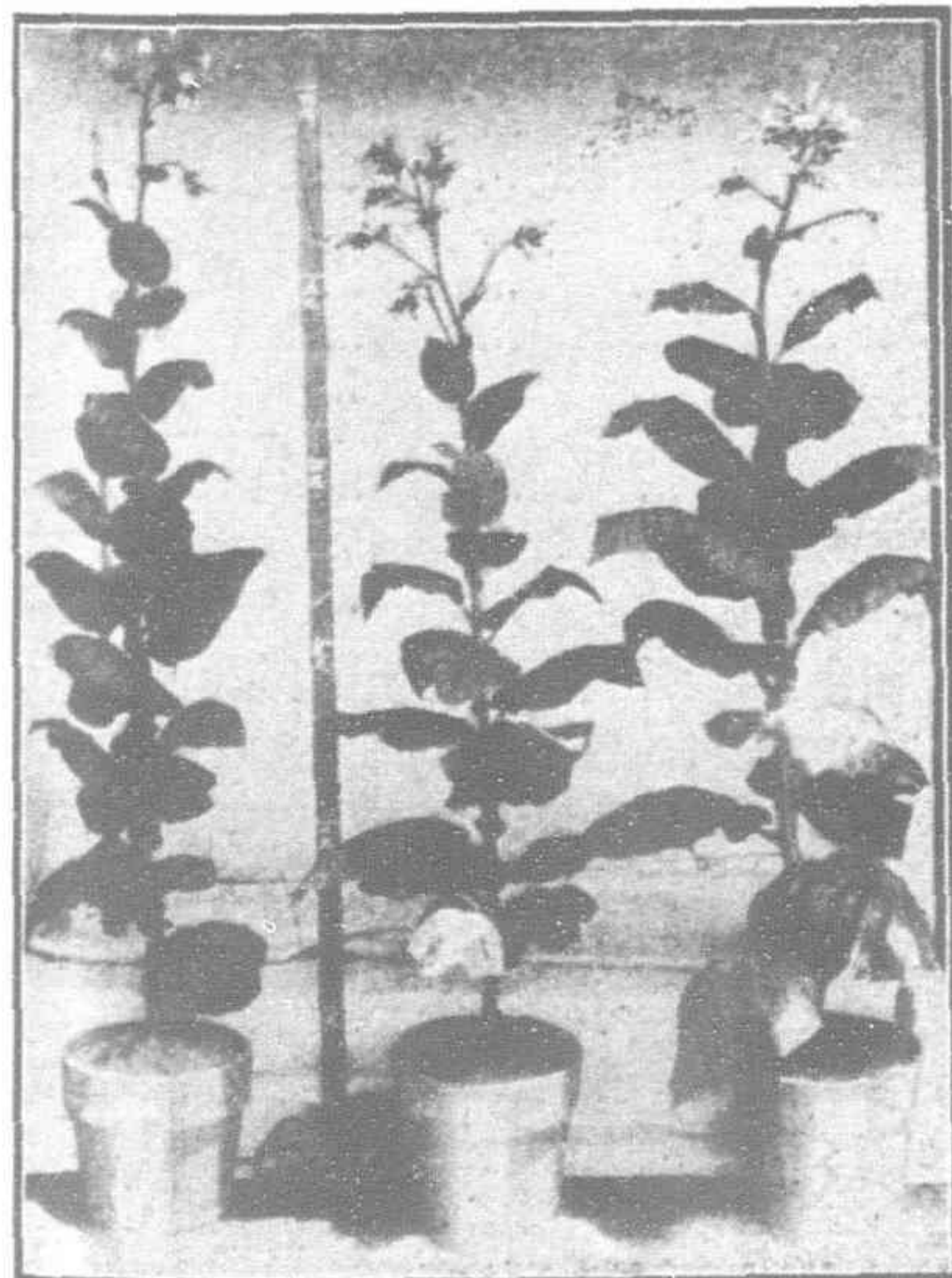


TRAINING KOREAN GIRLS IN SPINNING SILK THREAD

The latest investigation made by the Government General shows that the annual production of paper and paper manufactures in Chosen is valued at \$427,997. The paper manufactures consisted of paper boxes, fans, umbrellas, and lanterns; besides these, 22 tons of pulp, valued at \$1,892, were manufactured. The manufacture of pulp is a Japanese monopoly.

According to a statistical report of the production of textile fabrics in Chosen during 1914, recently published by the Government General, cotton cloth heads the list with 19,292,086 yards, valued at \$1,470,081, and hemp cloth second, with 13,441,087 yards, valued at \$1,073,897. In addition to these \$3,181,801 worth of T-cloths, silk cloth, and other textiles were produced during the year. Practically all of these goods are produced in the homes, as there are no factories in Chosen for the production of these articles.

The largest tobacco concern withdrew its business from Chosen entirely about the end of last June. Not only did the company close its factory at Chemulpo, but it withdrew all the tobacco in the hands of retail tobacconists. Between July and



SPECIMEN OF JAPANESE TOBACCO



TAIDEN (KOREA) EXPERIMENTAL TOBACCO FARM

December, 1914, only \$37,913 worth of manufactured tobacco was imported into Chosen, a decrease of \$94,325, or about 71 per cent, as against the figures for the corresponding period of the preceding year. The manufacture of tobacco by local companies partly accounts for the decrease of the import.

It is reported that a new mining law is being drafted by the authorities of the Government General, and it is generally understood that one of the new requirements will be that companies shall establish head offices in Chosen. The more important foreign mines, however, are

operated under special concessions. The total output of gold in Chosen during 1914 approximated \$5,000,000, the mines worked by foreigners showing an increased output of some \$500,000 over the preceding year, while those worked by Japanese and Koreans

showed a decrease of something over \$300,000. Arrangements were completed between the Japanese holder of a large placer gold-mining concession in South Pyeng An Province and an Australian company for the working of this concession. The same Australian company has recently purchased other placer fields in South Ham Kyong Province, work in both cases to be started during 1915.

Coal in Chosen, is small in quantity and rather inferior. The total output for 1914 was 200,000 tons, valued at \$700,000. However, the local press reports the discovery of a rich coal mine near Yongil Bay, on the southeast coast.

The fishing industry in Chosen is developing. Last year 17,472 boats, manned by 137,858 fishermen, obtained marine products valued at \$5,853,358.

The Mitsui Bishi Co., of Tokyo, Japan, are to erect an iron foundry at Kenjiho, near Pyengyang. The machinery was originally ordered from one of the belligerent countries; but it is now understood that it was ordered from the United States after cancellation of the first order.

At present there are in Chosen 13 electrical companies with an aggregate capital of \$5,403,300. The Japan-Korea Gas and Electric Light Co., and the Taiku Electric Light Co., paid dividends to their shareholders; eight other companies did not declare dividends.

The general condition of the foreign trade of Chosen for



SPECIMEN OF WHITE BURLEY FOR CIGARMAKING

the year 1914 is shown by the following table in which Japanese yen have been converted into United States currency at the rate of \$0.498:

Trade.	1913	1914
Exports .....	\$15,377,714	\$17,125,616
Imports .....	35,646,963	31,489,766
Total .....	51,024,677	48,615,382

Japan's share in the total foreign trade of Chosen was about 75 per cent (\$33,681,722), or seven-eighths of exports and two thirds of the imports.

### U. S. in Third Place

It is worthy of note that at the end of 1914 the United States was firmly intrenched in the third place in the total trade, being led only by Japan and China; and this, too, in spite of a decline of \$364,000 in imports of flour and of \$272,000 in kerosene, which articles have hitherto formed a considerable portion of the United States trade. The conclusion follows that this trade, instead of being confined to relatively few articles, is being extended over a wider range of goods.

#### Foreign Trade According to Countries.

Countries.	1913	1914
Japan .....	\$32,739,990	\$33,681,722
China .....	6,946,168	6,114,907
United States .....	3,953,733	3,097,263
United Kingdom .....	3,874,454	2,727,731
Germany .....	841,320	458,810

The decrease in the value of the imports during the year was very general, due primarily, of course, to the war, and also to the policy of the Government to encourage home industries. As the figures so far published have no reference to the trade by countries, it is impossible to tell which is suffering the most, so far as Chosen's trade is concerned, although it is apparent that there was a decided decrease in imports of shirtings, cottons, and tissues, in which the United States had but little interest, as well as in iron materials and manufactures in which it had its share.

### Increased Exports of Products

The increase in exports was caused mainly by the greatly increased shipments of rice to Japan and by the demand from Russia for live stock and hides, although there was some increase in most of the items. The marked exception was in beans, which dropped \$75,000, probably as a result of their being used more extensively as food, in place of the exported rice; and to the dullness of the bean markets in Manchuria and Japan.

Steamships and sailing vessels registered in Chosen during 1914 included 79 steamers, tonnage 9,483; and 238 sailing vessels, tonnage 6,083. There were also 15 vessels of a total capacity of 381 tons. The Government General appropriated some \$10,000 last year for shipping subsidies; also \$85,000 for new services was embodied in the budget, but this failed to pass on account of the early dissolution of the last Imperial Japanese Diet.

### Railways, Telegraphs, and Roads

The year 1914 in Chosen was marked by the completion of two additional branch lines, the Taiden-Mokpo and the Seoul-Gensan lines of the main railway. These branches are important, the former opening up a rich agricultural section in the southwest and the latter giving a strong impetus to the development of the industries of the east coast. The completion of these lines makes the total mileage of the Chosen Government railways 990 miles.

Proposed lines are from Taiku to Gensan, which will open up the southeastern country; from Hamheung to Chongjin along the northeast coast; from Pyeng Yeng to Gensan; and a line along the Yalu River. The survey of these four routes is now in progress. During the latter half of 1914 the total receipts of Chosen railways fell \$915,286 below the estimates, the receipts being \$3,710,081. However, both passenger and freight traffic showed increased returns over the preceding year.

Telegraph and telephone wires are being gradually extended, and the total length of routes along which telegraph wires are

laid is 4,109 miles. Telephone routes are 6,671 miles long. Telephone service is now installed in 45 of the principal cities, with 9,500 subscribers.

Considerable progress has been made in the improvement of the highways throughout Chosen in recent years; \$5,000,000 was appropriated by the Government in 1911 to be used in a period of five years. Work so far planned will be practically completed in time for the opening this fall of the industrial exhibition to commemorate the fifth anniversary of the annexation. These highways are broad and well constructed, being adapted for automobile traffic, and open up many districts not yet reached by railways.

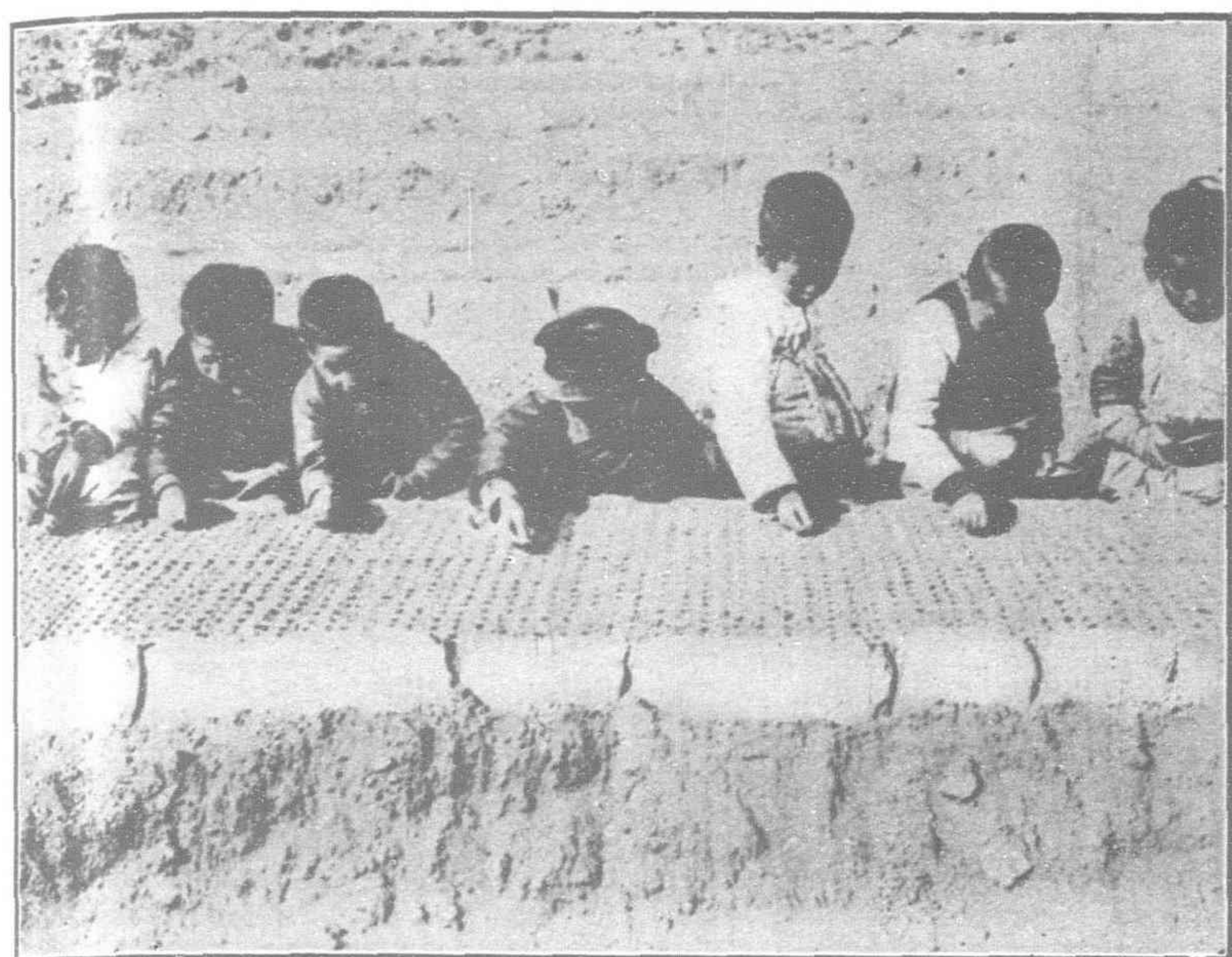
### Budget of Chosen for Fiscal Year 1915

The revised budget of the Chosen Government for the present fiscal year (1915) was made necessary because of the failure of the regular budget to pass the Diet.

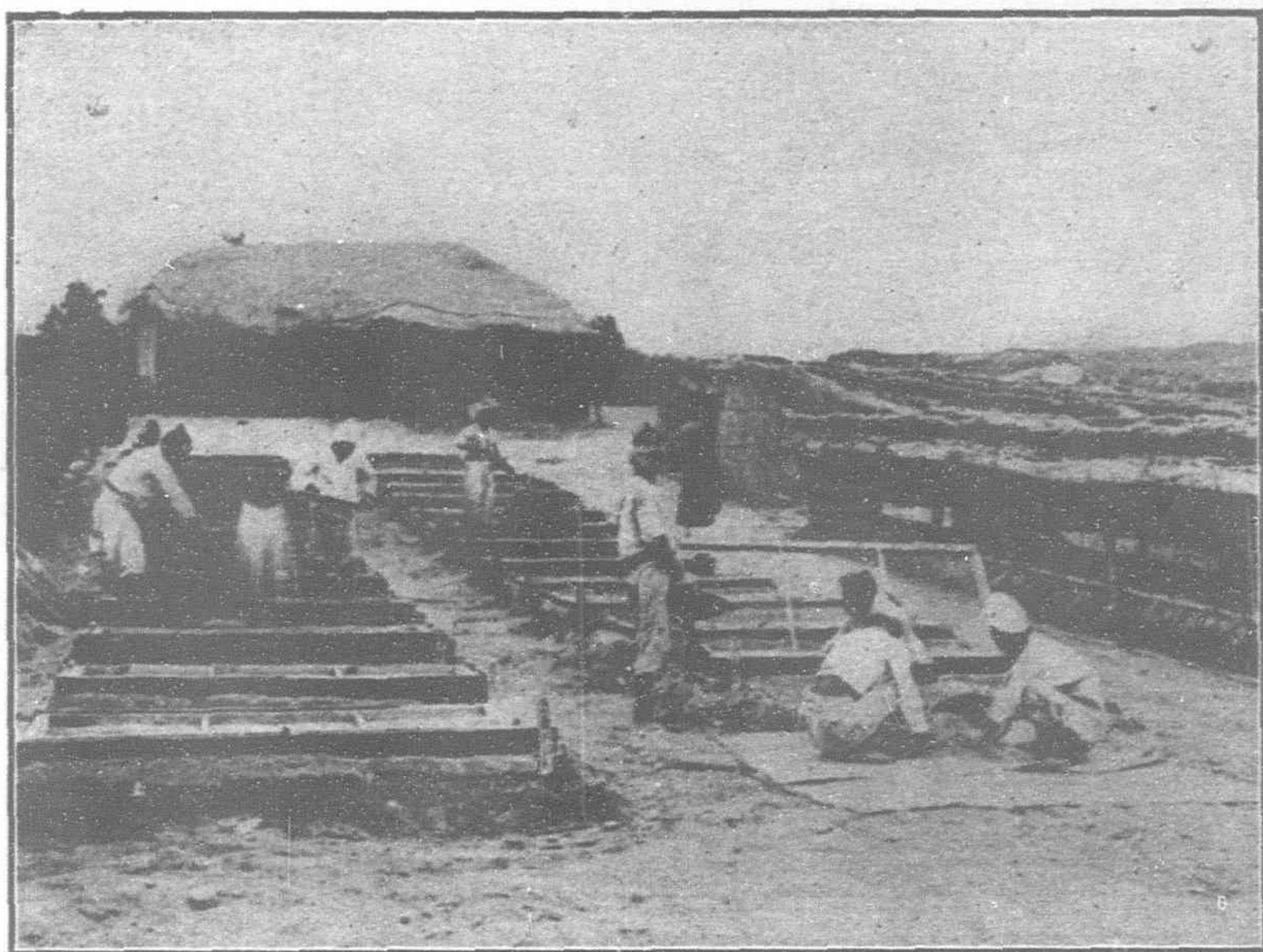
The following is an outline of the budget of Chosen for the fiscal year 1915:

REVENUE.							AMOUNT
Ordinary:							
Dues and taxes	...	...	...	...	...	...	\$8,526,316
Stamp receipts	...	...	...	...	...	...	854,530
Receipts from Government paddy fields	...	...	...	...	...	...	757,674
Receipts from Government-monopolized enterprises and Government properties	...	...	...	...	...	...	8,937,937
Miscellaneous receipts	...	...	...	...	...	...	399,190
Total	...	...	...	...	...	...	19,475,533
Extraordinary:							
Loan for starting enterprises	...	...	...	...	...	...	4,299,895
Subsidy from Tokyo Government	...	...	...	...	...	...	3,984,000
Total	...	...	...	...	...	...	8,283,895
EXPENDITURE.							
Ordinary:							
Prince Yi household	...	...	...	...	...	...	747,000
Government General	...	...	...	...	...	...	1,602,906
Law courts and prisons	...	...	...	...	...	...	1,285,712
Police	...	...	...	...	...	...	1,629,613
Provincial offices	...	...	...	...	...	...	2,024,859
Schools	...	...	...	...	...	...	165,916
Custom houses	...	...	...	...	...	...	293,408
Model agricultural stations	...	...	...	...	...	...	97,440
Pyongyang Mining Station	...	...	...	...	...	...	386,295
Central chemical laboratory	...	...	...	...	...	...	78,717
Postal and telegraph communication	...	...	...	...	...	...	1,791,771
Railway enterprises	...	...	...	...	...	...	3,765,934
Repairs	...	...	...	...	...	...	159,360
Miscellaneous expenses	...	...	...	...	...	...	2,599,405
Transferred to general account	...	...	...	...	...	...	100,200
Reserve	...	...	...	...	...	...	498,000
Total	...	...	...	...	...	...	17,489,576
Extraordinary:							
Encouragement of Industry	...	...	...	...	...	...	\$118,137
Gendarmerie	...	...	...	...	...	...	500,006
Korean troops	...	...	...	...	...	...	67,218
Land investigation	...	...	...	...	...	...	1,791,258
Subsidies	...	...	...	...	...	...	14,940
Fusan waterworks	...	...	...	...	...	...	691,693
Construction and repairs	...	...	...	...	...	...	1,410,860
Public works	...	...	...	...	...	...	3,774,840
Railway construction and repairs	...	...	...	...	...	...	19,860
Tapping of coal field by Pyongyang mining station	...	...	...	...	...	...	219,662
Investigations	...	...	...	...	...	...	9,960
Traveling to foreign countries	...	...	...	...	...	...	95,457
Seoul industrial competitive exhibition	...	...	...	...	...	...	15,438
Arrangements for celebrating the coronation	...	...	...	...	...	...	10,167,092
Total	...	...	...	...	...	...	27,656,668

A report which has just been published from Count Terauchi, Governor General of Chosen, was made to the Experts at Tokio, showing various enterprises undertaken and carried out during the three years following annexation. Included in this publication are the more noteworthy of the proclamations and instructions issued by the Governor General during this period. Among the topics that are touched upon are the cultivation of cotton, stock farming, sericulture, the production of rice, and the regulations intended to increase efficiency in handling goods at the customhouse.



KOREAN CHILDREN SOWING GINSENG-SEEDS



NURSERY BED OF GINSENG

Count Terauchi's statement refers to the fact that Japanese migrating to Chosen have been steadily increasing in numbers since annexation. In 1910 the Japanese living in the peninsula numbered only 146,000, forming some 43,000 households. In June, 1913, the figures had increased to more than 264,000 and 75,000, respectively. The statement continues, in part:

In former days Japanese residents in Chosen mostly congregated in the open ports and vicinity and engaged in the import and export trade or in retail business on a small scale. After annexation, however, when peace was generally restored in the interior and traveling and habitation by Japanese became safe, Japanese settling in important places outside the open ports and engaging in mining, agriculture, fishing, transportation, and other lines of business steadily increased.

#### Japanese Turning to Agriculture

Especially noteworthy is the fact that Japanese engaged in agriculture, an industry which requires much time before substantial profits can be obtained from it, have changed their method of conducting it. Formerly Japanese, buying paddy and dry fields in Chosen, aimed at obtaining incomes by renting them to Korean tenants or reaping profits by reselling them. Now those undertaking agricultural industry themselves are gradually increasing.

Besides, as a result of the efforts put forth by the Oriental Development Co., under Government direction, to encourage the immigration of Japanese farmers, the number of Japanese farmers living in Chosen has greatly increased. Thus at the time of annexation the total number of their households was about 2,130. These figures increased to 2,960 during the following year (1911) and further increased to 4,380 during 1912, showing an increase to more than double those in the year of annexation.

Cotton can be cultivated with advantage in all parts of Chosen, but cotton of native species has been found not quite good enough for spinning purposes. In consequence measures were taken to improve it. At the same time, it being recognized that cotton of the American upland species grows well in south Chosen, the former Korean Government, under direction of the Residency General, put forth efforts for encouraging its cultivation in that part of the peninsula by establishing at Mokpo a temporary station for the experimental cultivation of American cotton. After annexation, in order to promote its cultivation by Korean farmers still more widely, guilds of cultivators of cotton were caused to be formed, farmers showing themselves specially zealous in the cultivation of upland cotton were publicly rewarded by the presentation of agricultural implements, and the produce of places having difficulty in disposing of it was made salable by the cultivators being given subsidies toward the cost of transportation. In these ways the cultivation of upland cotton was most vigorously encouraged with a very satisfactory result.

Thus whereas in the year when annexation was carried out the area of land devoted to the cultivation of upland cotton

was about 1,000 cho and its cultivators numbered less than 20,000, in 1912 the area increased to about 6,500 cho and cultivators to 77,000, while in 1913 the area reached 14,000 cho (1 square cho 2.45 acres). As to the amount of cotton exported to Japan, while it was only about 250,000-odd yen in 1910, it increased to 920,000-odd yen in 1913.

#### Encouragement Given to Sericulture

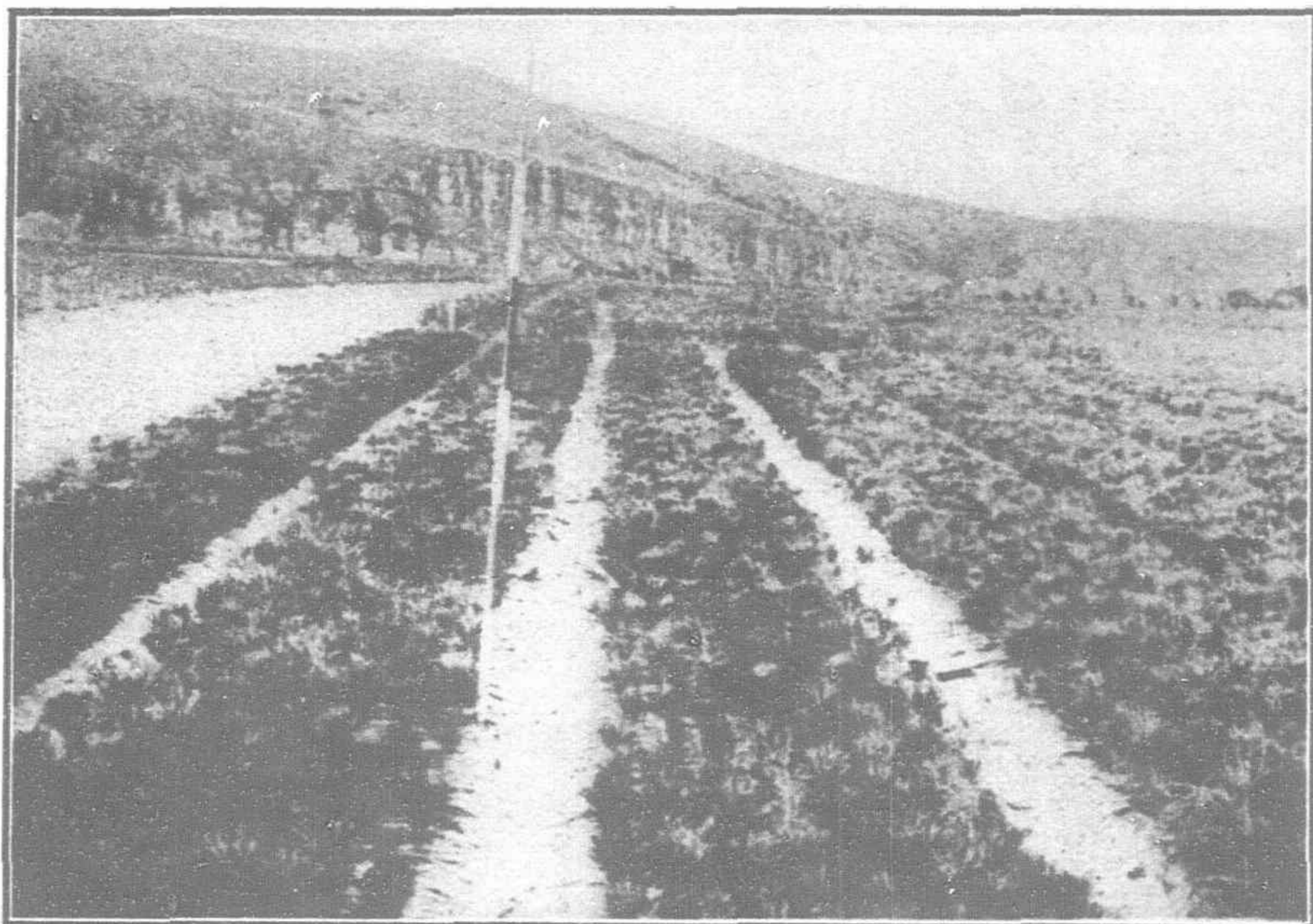
Like other branches of the agricultural industry, sericulture was also formerly in a very undeveloped condition. Silk cocoons produced in Chosen were inferior in quality and diverse in variety. Mulberry leaves used were also very inferior in quality, and mulberry orchards were limited in area. In short, the condition of the sericulture industry in the peninsula was anything but satisfactory. In order to raise it, therefore, measures were first taken to cause the model agricultural station and provincial nurseries to rear and distribute among Koreans seedlings of the best varieties of mulberry trees imported from Japan. Subsidies were also granted to people forming mulberry orchards, so that the cultivation of these seedlings might be encouraged and the area of mulberry orchards enlarged.

Koreans soon found that leaves of Japanese mulberry trees were superior in every respect when compared with those of Korean trees, and the number of people cultivating them steadily increased. In 1912 the total area of orchards planted with Japanese mulberry trees reached about 1,600 cho throughout the peninsula.

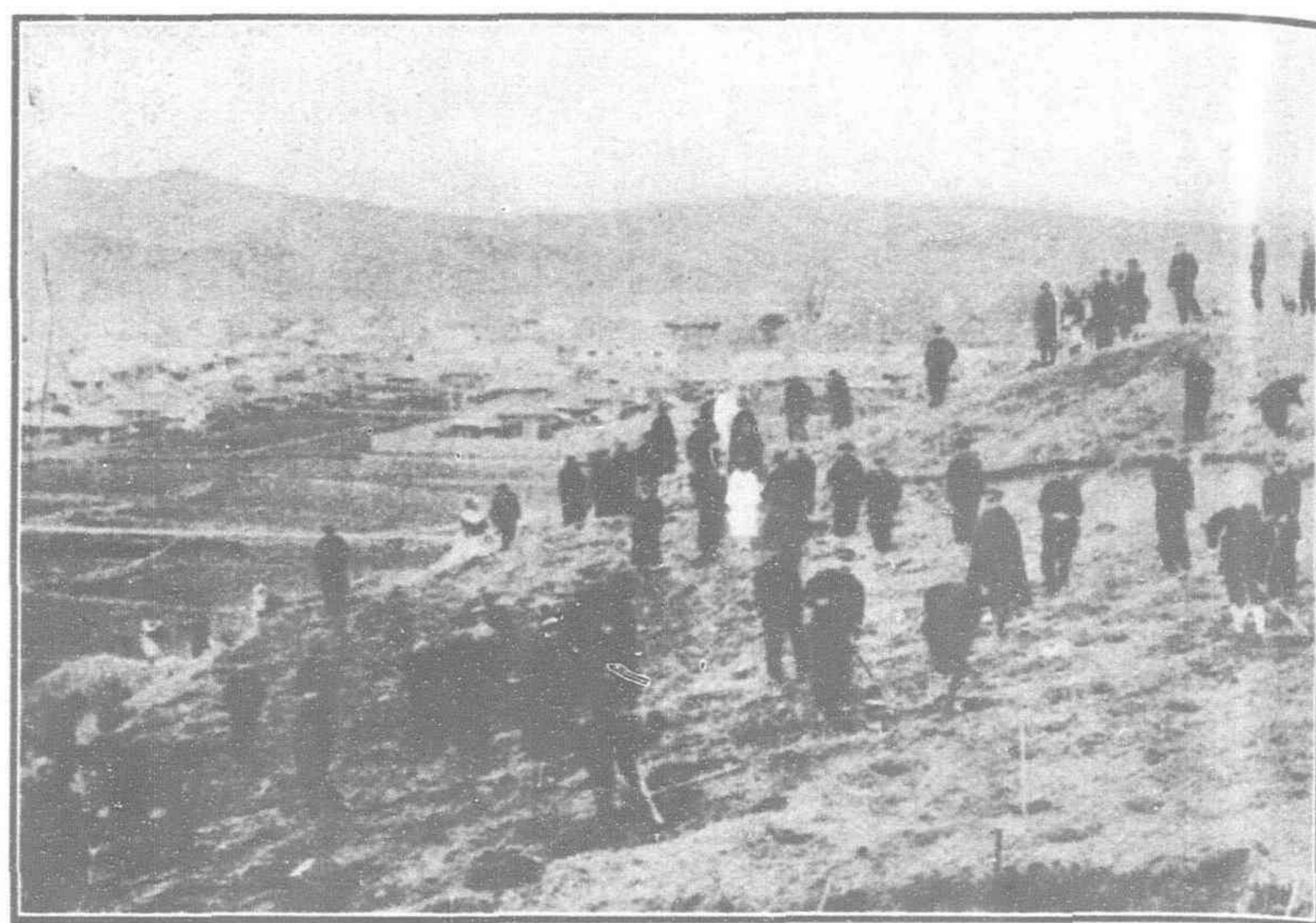
The model agricultural station was charged with the task of selecting species best suited to the climate of Chosen. The result was that five varieties were selected and eggs obtained from these five varieties of silk worms by the model agricultural station were distributed.

As silkworms hatched from these eggs were found to be very strong in resisting diseases and their cocoons were excellent in quality, the hatching of silkworms from eggs of the improved species rapidly became general, and the demand for cocoons spun by them also greatly increased, while the price quoted was three times that given for cocoons of native species. As people in general outside agricultural people can engage in the sericulture industry with comparative ease, along with the encouragement given by the Government, those undertaking it remarkably increased in number, and the total crop obtained in 1913, including spring, summer, and autumn breeds, amounted to as much as 35,400-odd koku, whereas that obtained in 1909, the year preceding annexation, amounted to only 11,900-odd koku.

Cattle are indispensable to the agricultural industry in Chosen and occupy a prominent position in the list of items of the export trade of the country. Great attention was paid to the improvement and increase of the breed. Further, in all local centers, people were induced to organize cattle guilds



SEEDLING STATION, SHINSHU, SOUTH KEISHO PROVINCE



LOCAL OFFICIALS PLANTING TREES ON ARBOR DAY

among themselves, and experts were appointed to teach them the method of increasing their stock. The slaughter of cows in calf was restricted. By means of these measures, without depending on foreign breeds, the improvement and increase of the native breeds best adapted to the soil and climate of Chosen were undertaken, and the result obtained was very satisfactory. Thus, whereas the total number of cattle in Chosen was 628,000 in 1909, and 703,000 in 1910, the year of annexation, it increased to 906,000 in 1911 and to 1,040,000 in 1912. Now, Korean cattle being in great demand at Vladivostok and in other parts of Siberia, as well as in Japan, there is little doubt that they will become one of the most important products of Chosen.

#### Afforestation Systematically Undertaken

The encouragement of afforestation is what is most closely connected with the improvement of the agricultural industry. In Chosen, in consequence of the ruthless felling of trees and the denudation of mountains, floods or drought frequently occur, and not only the agricultural industry but roads and railways suffer much damage. In order, therefore, to eradicate the evil the authorities early undertook to encourage afforestation among the people. In 1908 the residency general caused the Korean Government to provide regulations for the administration of forests in general, as well as for the management of State-owned forests, and thus fixed a general policy with regard to afforestation work in this peninsula. After annexation, in 1911, in order to complete the adjustment of forests and foster in the minds of the people at large the love of forests,

the old regulations were abolished and new forestry regulations and some minor regulations relating thereto were promulgated.

At the same time strenuous efforts were put forth to encourage afforestation work.

First of all, after due investigation of State-owned forests, those most needing protection were selected and their areas fixed, special offices for supervising them being created.

As for those State-owned forests the retention of which as such was considered unnecessary, it was arranged that these should be leased to private persons undertaking afforestation, and that should they succeed in their work they should be transferred to their possession.

In July, 1913, there existed throughout Chosen 319 nurseries, including one maintained at State expense, 270 maintained by local revenue, and 48 maintained by proceeds from the imperial donation fund. In these nurseries seedlings of pines, acacia, chestnut, poplar, and a few other trees were reared and distributed free. There are also not a few similar institutions established and managed by private persons and companies, and these contribute in no small degree to the spread of afforestation work.

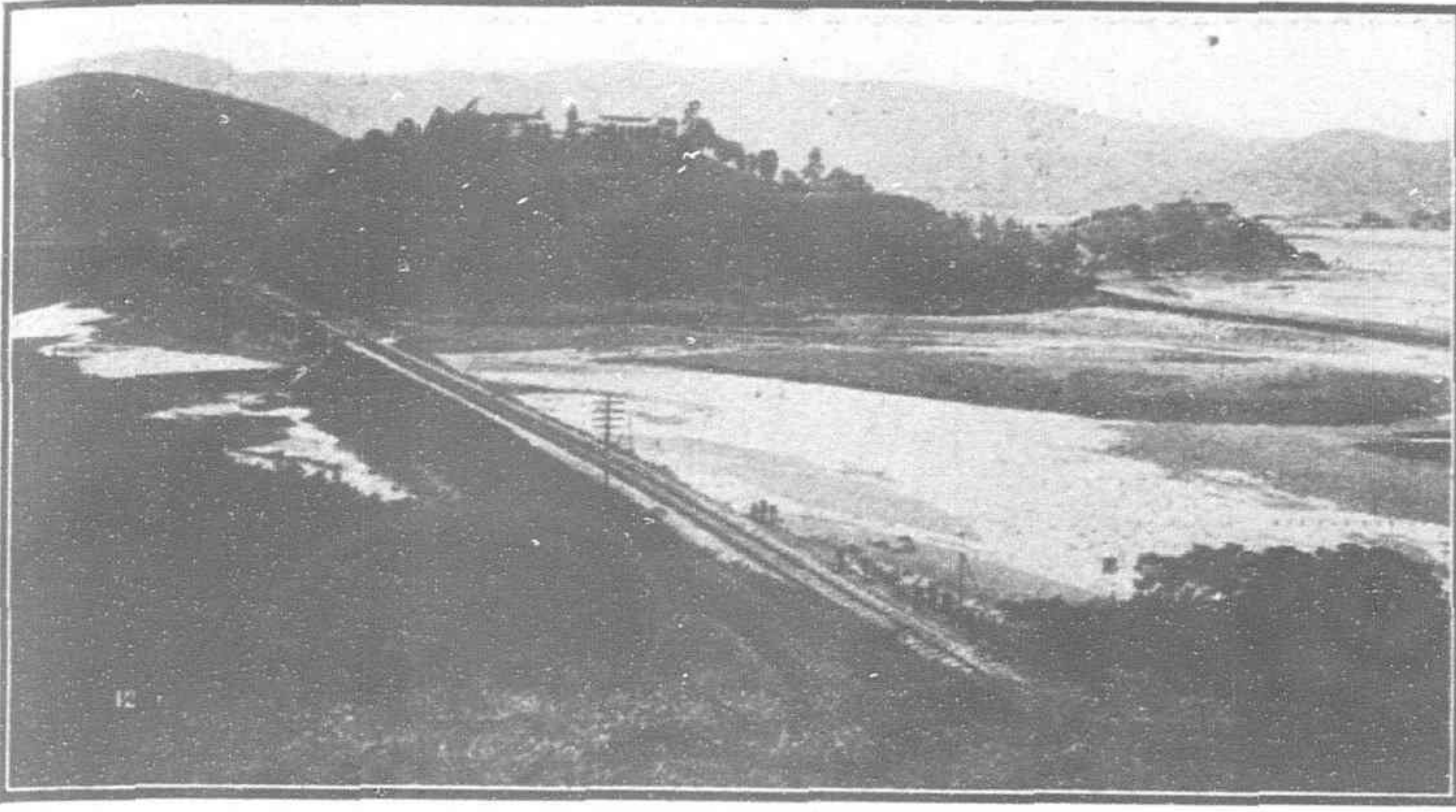
In 1911 Arbor Day was established in Chosen, April 3, a great national holiday, being fixed upon, and 4,650,000 young trees were planted on that day by officials and private persons throughout Chosen. In 1912 there were 10,160,000 young trees planted and 12,430,000 in 1913. The steady increases in figures will show how people in general are becoming cognizant of the benefit of afforestation.



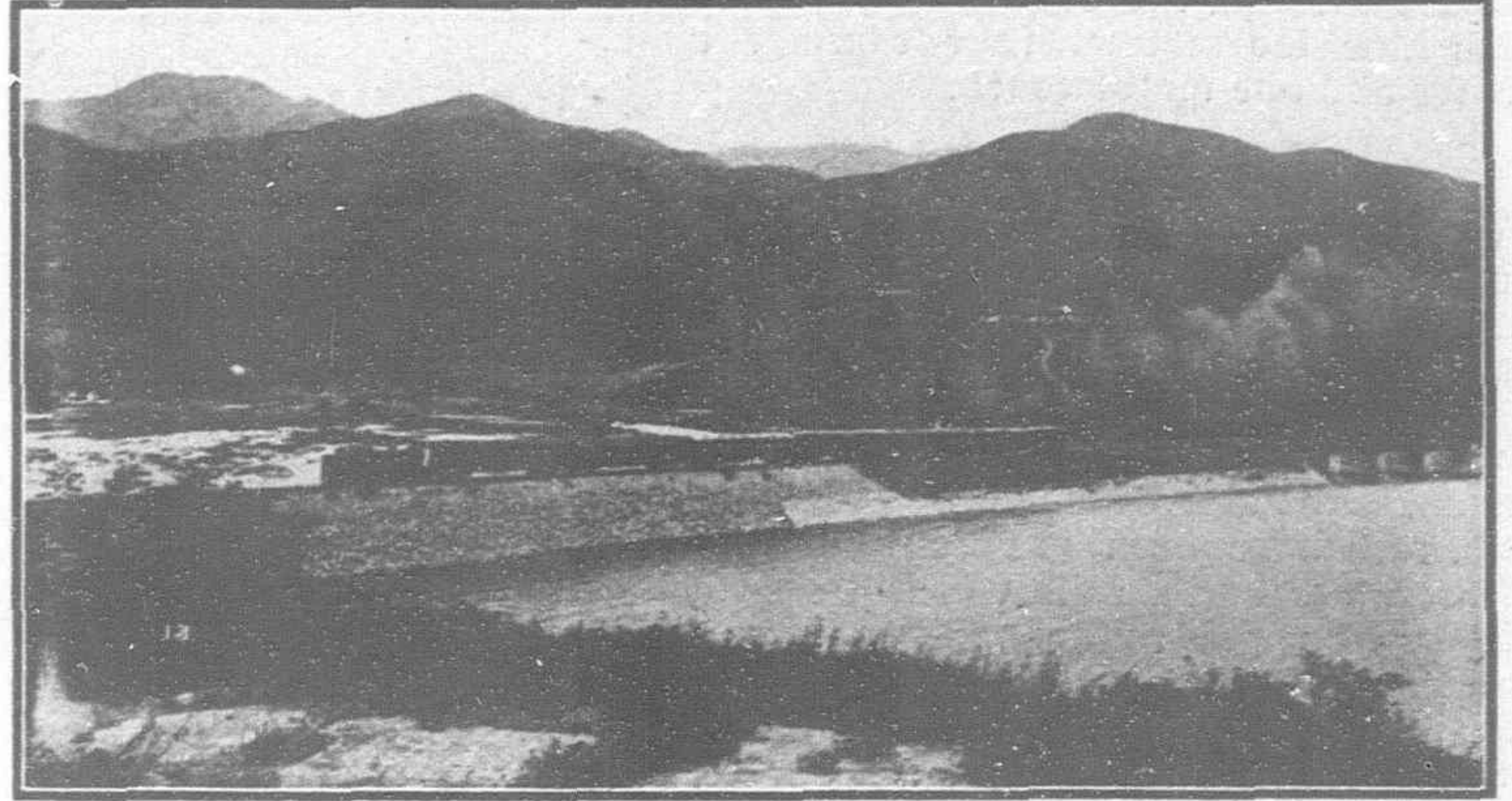
DISINFECTING A GINSENG GARDEN WITH BORDEAUX LIQUID



PLANTING OF PINE-TREES BY HIGH OFFICIALS OF THE CIVIL GOVERNMENT



CANTON-KOWLOON RAILWAY—CROSSING TIDE FLATS



CANTON-KOWLOON RAILWAY—EMBANKMENT APPROACH TO BRIDGE

## KOWLOON-CANTON RAILWAY (British Section).

[ANNUAL REPORT FOR 1914 OF H. P. WINSLOW, MANAGER]

The foundations for the new Terminal Station at Kowloon were completed at the end of 1913 and in February of the year under review a contract was let for the Station Building. Satisfactory progress has been made by the Contractor, the building having approximately reached the first floor level. Orders for the necessary fittings and fixtures have been placed with the Crown Agents and it is anticipated that the Station will be opened for the use of the public by March, 1916.

Since the opening of the Railway, great inconvenience and no little anxiety has been experienced at Hung Hom where the connection to the shunting and loco yards joined the main line to the south of an overbridge approached by a sharp curve. This awkward arrangement has been changed during the year by the laying of a second line of rails between Kowloon and Hung Hom, thus relieving the main line between Kowloon and Yaumati of all junctions and crossings.

A starting signal interlocked with the movement of the points has been erected at Lowu, giving line clear to trains from the Chinese Section to the British Section main line.

The Platforms of the new Terminal Station were opened for traffic in April after receipt of the points and crossings from England, the track removed from Salisbury Road and the portion formerly used by the Railway handed back to the Public Works Department.

The Station Yard for the present consists of 12 roads converging onto 2 lines, one being the through or main line to Yaumati, and the second, the "empty" line to Hung Hom and the loco yard. These are temporarily controlled by a complicated system of point locks but an order has been placed through the Crown Agents for a proper system of signal-

ling which will be operated from one signal cabin containing 72 levers, room for 8 additional levers being provided for future extension. The level crossing gates at Holt's Wharf will also be controlled by this cabin.

As pointed out in my Report of 1913 the embankments between mile  $7\frac{1}{2}$  and 14 were seriously damaged during the Typhoon of August 17th and it was decided that protection works of a more substantial nature were necessary along the coast line to avoid the risks of washouts. Good progress has been made since the work commenced in November and it is anticipated that before the next typhoon season arrives the necessary repairs will be practically completed.

Owing to the continual rise in house rents causing the Railway staff to be frequently seeking more reasonable accommodation and changing their residences, some even being forced to live on the island of Hongkong, sanction was obtained to erect blocks of quarters on Railway lands at Hung Hom for most of the European staff. Drawings and estimates were prepared during the year and contracts for the buildings have since been entered into and the work started.

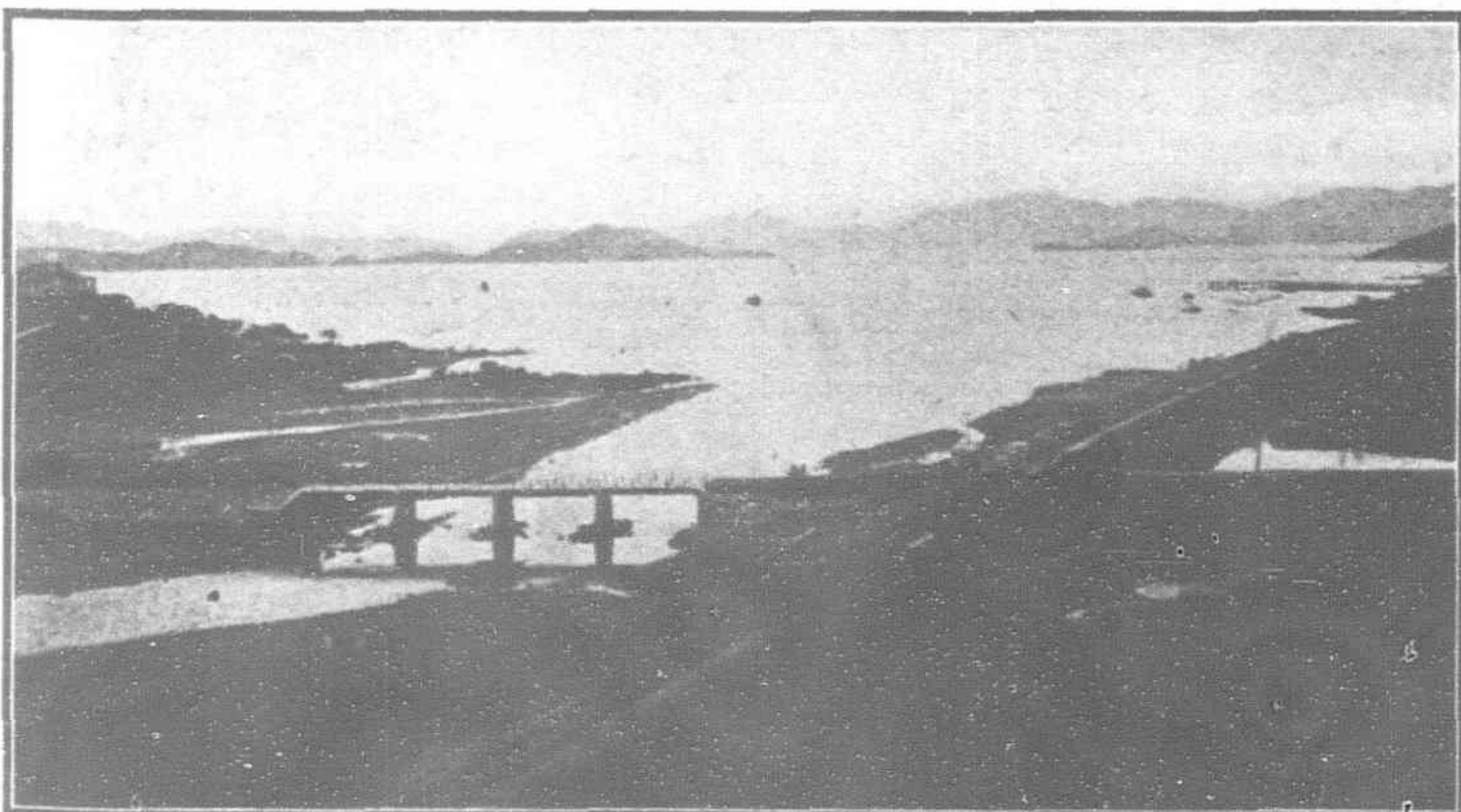
The general development of the Traffic on the Railway necessitating orders for additional locomotives and rolling stock made the extension of the locomotive and carriage accommodation at Hung Hom a necessity. The matter was given careful consideration and when it was found that the present site was capable of expansion sufficient to serve for very many years to come, a definite scheme was drawn up, and it was arranged to carry out only so much of it as was immediately necessary. These extensions include the removal of the old store and the building of a new one,

which work was well in hand by the end of the year and has since been completed, the extension of the present paint shop as a locomotive running shed, the conversion of the present carriage running shed into a paint shop, and the building of a new carriage running shed capable of accommodating 2 trains of 8 coaches each, also the rearrangement of the tracks in the loco yard so as to come in with the new works and the scheme decided upon. An order for the necessary points and crossings and permanent way has been placed through the Crown Agents during the year.

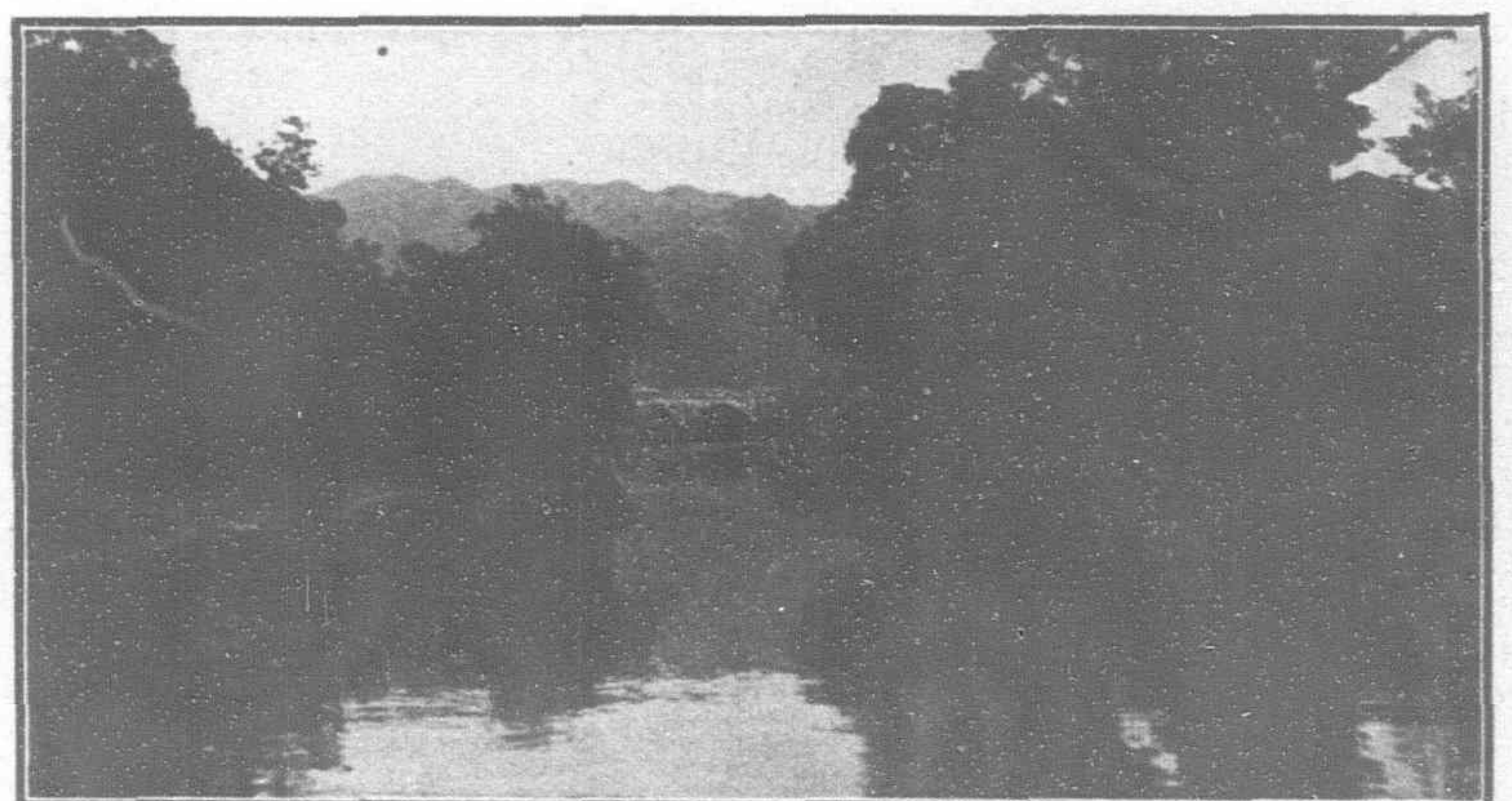
On January 29th the crank axle of No. 2 locomotive broke when approaching Fanling station, fortunately without causing other damage. A new crank axle was supplied by the Hongkong and Whampoa Dock Company and the locomotive was again in service on March 16th since which time it has been working satisfactorily. Whilst waiting for the new crank axle the engine was given a general overhaul and repainted. This is the only accident of consequence to rolling stock during the year.

The locomotive ordered in 1913 arrived in the Colony in May and was erected and handed over to the traffic at the end of June. This engine has been fitted with mechanical lubricators to the cylinders and valve chests which have been found to be a great improvement. A Pyle electric head lamp has been fitted during the year to the locomotive used for night work.

One 30 ton wagon has been converted into a flat bogie. Eight Main Line coaches have been given a general overhaul and repainted and the erection of eight new coaches on underframes received at the end of the year has been commenced. Further orders were placed during



CANTON-KOWLOON RAILWAY—APPROACH TO KOWLOON



CANTON-KOWLOON RAILWAY—SCENE ALONG ROUTE

the year through the Crown Agents for three Main Line locomotives, four carriage underframes and one motor coach.

#### Fanling Branch Line.

Washouts occurred on the Fanling Branch Line in July and September, one owing to the bursting of village bunds which damaged some 800 feet of Railway bank and another caused by a sudden mountain freshet washing away the wings and approaches of a bridge over a stream. About  $\frac{3}{4}$  of a mile of second hand 35 lb. rails have been purchased in order to release some 85 lb. rails which were temporarily laid in the road and were required at Kowloon, and many new intermediate sleepers were laid and bridges strengthened in order to carry the heavier class of rolling stock placed on the line during the year.

In December, 1913, six underframes were received for the Fanling Branch Line and on these underframes the following coaches have been erected:—One first class, one first and brake compo, one third and brake compo, and three thirds. The work was started in January and the coaches completed in March. The old coaches were condemned, some were sold and the underframes of others have been used to make steel sided wagons.

In April the 2 foot gauge No. 2 Hudswell Clarke loco was brought into the shops from Fanling and rebuilt. The frame of this locomotive has been lengthened by 1 foot 3 inches, a covered cab fitted in place of an open one and the couplings altered to the pattern of the new rolling stock on the narrow gauge branch line.

A revision of the Time Table was made early in the year and a night train service between Hongkong and Canton was inaugurated in March. This night service was continued until August 16th when the train was derailed at mile 19 on the Chinese Section by a gang of robbers removing two rails and attacking the train. After this incident it was decided to discontinue the night service. The day service has been maintained throughout the year with the exception of the period between July 11th and 24th when the through trains to Canton were suspended owing to floods which seriously damaged the line between Shek Lung and the former City.

#### Accounts.

The Expenditure to December 31st, 1913, on Capital Account was for the Main Line \$13,459,227.43 and the Branch Line \$62,004.13 making a total of \$13,521,231.56. During the year under report further expenditure was incurred on works detailed in this Report amounting to \$546,602.44 for the Main Line, which includes a debit for loss on Exchange of \$194,847.04, and \$27,826.69 on the Fanling Branch Line making a total of \$574,429.13 for the year.

The Revenue Statements of Earnings and Expenditure take the usual form. The net result shows that against an Estimate of \$271,299, the actual Expenditure was \$274,366.39 an excess of \$3,157.39 mainly due to an unexpected rise in the price of coal which could not have been foreseen at the time the Estimates were framed, and to increased train mileage. The Earnings were estimated to be \$372,600 whilst the actual receipts amounted to \$364,608.32 being \$7,991.68 below the Estimate. It was only to be expected that the war would affect the passenger traffic, and this together with the unfortunate attack on the night train mentioned above no doubt had an adverse effect and in addition the train service to and from Canton was suspended for 14 days owing to floods. Though the Earnings did not quite reach the estimated figures, the local traffic has increased slightly and shows an excess of \$2,174.94 over the previous year despite the fact that the customary movements of the troops in the autumn did not take place. The

#### CONSTRUCTION ACCOUNT—MAIN LINE

I.	II.	III.	IV.	V.	VI.	VII.
Main-Head.	Sub-Head.	ESTIMATES.		Expenditure		Funds
		1913.	Additions	Total.	to 31st	Available.
		\$ c.	1914.	\$ c.	December,	\$ c.
					1914.	
I.—Preliminary Expenditure,.....	Survey,.....	42,277.65	—	42,277.65	42,277.65	—
II.—Land,.....	Land,.....	2,669,758.45	4,801.57	2,674,560.02	2,254,880.13	419,679.89
III.—Formation,.....	(a) Earthwork,.....	2,587,580.00	168,551.73	2,756,131.73	2,596,526.54	159,605.19
	(b) Tunnels, ...	3,811,145.19	—	3,811,145.19	3,819,945.51	8,800.32
	(c) Roads,.....	120,200.00	5,787.66	125,987.66	126,672.02	684.36
IV.—Bridges,...	(a) Major,.....	816,495.41	—	816,495.41	829,047.22	12,551.81
	(b) Minor,.....	350,126.47	—	350,126.47	359,491.49	9,365.02
	(c) Culverts,.....	72,546.09	—	72,546.09	71,567.78	978.31
V.—Fencing,...	(a) Boundaries,...	39,999.45	8,493.22	48,492.67	44,486.33	4,006.34
	(b) Signs,.....	400.00	—	400.00	727.31	327.31
VI.—Telegraph,...	Telegraph,.....	30,032.17	2,565.33	32,597.50	40,551.65	7,954.15
VII.—Track,.....	(a) Ballast,.....	130,066.54	3,000.00	133,066.54	175,630.99	42,564.45
	(b) Permanent Way,.....	702,885.71	16,000.00	718,885.71	812,742.46	93,856.75
VIII.—Stations & Buildings,...	(a) Buildings & Fixtures,.....	308,800.00	411,000.00	719,800.00	314,107.05	405,692.95
	(b) Station Machinery,.....	40,000.00	28,280.00	68,280.00	36,145.36	32,134.64
	(c) Furniture,...	5,000.00	—	5,000.00	15,241.93	10,241.93
	(d) Workshops,...	60,000.00	—	60,000.00	89,899.74	29,899.74
IX.—Plant,.....	(a) Construction,...	101,884.53	—	101,884.53	167,336.84	65,452.31
	(b) Loco, Tools and Plant,...	50,000.00	—	50,000.00	68,775.91	18,775.91
	(c) C. & W. Tools and Plant,...	10,000.00	—	10,000.00	25.00	9,975.00
	(d) Engineering,...	—	—	—	10.00	10.00
	(e) Loco Rolling Stock,.....	119,400.00	243,706.30	363,106.30	251,561.05	111,545.25
	(f) C. & W. Rolling Stock,...	302,540.00	217,541.20	520,081.20	426,424.39	93,656.81
X.—General Charges,...	(a) 1. Salaries and Allowances,...	398,720.43	—	398,720.43	442,971.18	44,250.75
	2. Quarters and Offices,.....	88,495.13	—	88,495.13	113,457.39	24,962.26
	3. Instruments,...	11,639.61	—	11,639.61	10,339.91	1,299.70
	4. Office Expenses,.....	32,710.93	—	32,710.93	34,770.08	2,060.05
	5. Medical,.....	22,319.46	—	22,319.46	23,071.90	752.44
	6. Home Charges,.....	124,478.29	—	124,478.29	134,978.80	10,500.51
	7. Interest,...	713,922.67	—	713,922.67	701,705.62	12,217.05
	8. Exchange,...	200,000.00	—	200,000.00	282,257.14	82,257.14
	(b) Accounts,...	42,843.53	—	42,843.53	41,222.35	1,621.18
S.S.,.....	Stores in Suspense,.....	—	—	—	241,494.53	241,494.53
		\$ 14,006,267.71	1,109,727.01	15,115,994.72	14,005,829.87	1,110,164.85

N.B.—Figures printed in italics are minus quantities.

Column IV.—Additional work, rolling stock, etc., sanctioned; expenditure approved in Dec., 1914.

through traffic shows a satisfactory increase under the circumstances of \$28,222.02. I regret that I am unable to report any considerable improvement in the Goods Traffic. A slight increase is shown in both Through and Local Goods, but though efforts have been made in all directions and enquiries have been received, for the reasons already stated in my Report for 1913, the receipts from this source have made no satisfactory progress.

The Working Expenses for the year are slightly higher than in 1913. It will be observed on reference to the figures that the Locomotive expenses are mainly responsible for this, the percentage under Abstracts B & C being 35.61 as against 30.39 for 1913, this as previously explained is mainly due to an unexpected advance of \$1.85 per ton in the price of coal and to a smaller extent to additional mileage due to an improved Time Table.

The Gross Earnings for the year were \$364,608.32 as against \$333,633.32 for 1913 an increase of \$30,975. The Working Expenses amounted to \$274,366.39 an increase of

\$28,557.81 due as stated above to the increase in the price of coal. The balance after paying Working Expenses stands at \$90,241.93 or \$2,417.19 more than the previous year.

During the year the question of the division of the fares has continued to receive the attention of both Administrations and in August a decision was arrived at and the outstanding accounts between the two Sections, it is hoped, will be finally adjusted early in the ensuing year.

#### Accidents.

No accidents occurred to the travelling Public or to Railway servants during the year, but four Chinese were killed whilst trespassing on the Railway.

#### Staff.

During my absence on leave from April 8th to November 19th Mr. Robert Baker (Engineer of Way and Works) acted as Manager. Mr. G. A. Walker, Chief Storekeeper, was granted nine months' leave and returned to duty on November 19th.

## CANTON—KOWLOON RAILWAY. REVENUE ACCOUNT FOR THE YEAR ENDING 31st DECEMBER, 1914.

1913	Per cent. on Gross Receipts.	Expenditure	Amount	Per cent. on Gross Receipts.	1913	Earnings	Amount	Total.
			1914				1914	
\$ c.	%	Main Line.	\$ c.	%	\$ c.	Local.	\$ c.	\$ c.
52,218.60	15.65	To Maintenance of Way and Works,	42,857.71	11.75	107,768.69	By Coaching Traffic	108,398.58	
101,375.22	30.39	„ Loco, Carriage and Wagon Ex-			8,692.86	„ Goods	10,121.25	
		penses, ... ..	129,861.27	35.61	12,744.93	„ Sundry	12,861.59	
39,550.99	11.86	„ Traffic Expenses, ... ..	46,234.00	12.68				131,381.42
41,534.58	12.45	„ General Charges, ... ..	40,422.17	11.09	129,206.48			
42.90	.01	„ Special and Miscellaneous Ex-						
		penditure, ... ..						
		Branch Line.			187,928.68	By Coaching Traffic	215,045.63	
4,816.16	1.44	To Maintenance of Way and Works,	6,369.43	1.75	9,585.91	„ Goods	10,690.98	
5,087.26	1.53	„ Loco, Carriage and Wagon Ex-				„ Sundry		225,736.61
		penses, ... ..	7,394.28	2.03	197,514.59			
1,167.87	.35	„ Traffic Expenses, ... ..	1,227.53	.34				
		„ General Charges, ... ..						
15.00		„ Special & Miscellaneous Ex-			6,444.10	By Coaching Traffic	7,018.14	
		penditure, ... ..			468.15	„ Goods	472.15	
						„ Sundry		7,490.29
245,808.58	73.68	„ Balance (Net Earnings) ...	274,366.39	75.25				
87,824.74	26.32		90,241.93	24.75	6,912.25			
333,633.32	100.00		\$364,608.32	100.00	333,633.32		\$ 364,608.32	

J. MORRIS,

Chief Accountant.

Kowloon, April 14th, 1915.

H. P. WINSLOW,

Manager.

## EXPENDITURES. CANTON—KOWLOON RAILWAY

		Expenditure to 31st December, 1913.	Net Expenditure during 1914.	Expenditure to 31st December, 1914.
		\$ c.	\$ c.	\$ c.
Preliminary Expenditure, Survey, ... ..		42,277.65	.....	42,277.65
Land, ... ..	Land, ... ..	2,250,222.28	4,657.85	2,254,880.13
Formation, ... ..	(a) Earthwork, ... ..	2,568,171.92	28,354.62	2,596,526.54
	(b) Tunnels, ... ..	3,806,982.63	12,962.88	3,819,945.51
	(c) Roads, ... ..	120,884.36	5,787.66	126,672.02
Bridges, ... ..	(a) Major, ... ..	829,047.22	.....	829,047.22
	(b) Minor, ... ..	359,491.49	.....	359,491.49
	(c) Culverts, ... ..	71,567.78	.....	71,567.78
Fencing ... ..	(a) Boundaries, ... ..	36,993.11	7,493.22	44,486.33
	(b) Signs, ... ..	640.31	87.00	727.31
Telegraph, ... ..	Telegraph, ... ..	37,767.34	2,784.31	40,551.65
	(a) Ballast, ... ..	164,399.50	11,231.49	175,630.99
	(b) Permanent Way, ...	786,792.16	25,950.30	812,742.46
Stations and Buildings, ...	(a) Buildings and Fixtures,	240,360.17	73,746.88	314,107.05
	(b) Station Machinery,	32,994.95	3,150.41	36,145.39
	(c) Furniture, ... ..	15,099.13	142.80	15,241.93
Plant, ... ..	(d) Workshops, ... ..	88,713.39	1,186.35	89,899.74
	(a) Construction, ... ..	175,615.45	8,278.61	167,336.84
	(b) Loco, Tools, and Plant,	68,775.91	.....	68,775.91
	(c) C. & W. Tools and Plant,	25.00	.....	25.00
	(a) Engineering, ... ..	10.00	.....	10.00
	(c) Loco Rolling Stock, ...	194,261.75	57,299.30	251,561.05
General Charges, ... ..	(f) C. & W. Rolling Stock,	398,120.38	28,304.01	426,424.39
	(a) 1. Salaries and Allow-	441,035.17	1,936.01	442,971.18
	ances, ... ..			
	2. Quarters and			
	Offices, ... ..	113,520.11	62.72	113,457.36
	3. Instruments, ... ..	10,449.91	110.10	10,339.91
	4. Office Expenses, ...	34,131.91	639.07	34,770.98
	5. Medical, ... ..	23,071.90	.....	23,071.90
	6. Home Charges, ... ..	134,978.80	.....	134,978.80
	7. Interest, ... ..	701,705.62	.....	701,705.62
	8. Exchange, ... ..	477,104.18	194,847.04	282,257.14
	(b) Accounts, ... ..	41,222.35	.....	41,222.35
	Stores in Suspense, ...	147,001.96	94,492.57	241,494.53
Total, ... ..		\$13,459,227.43	\$546,602.44	\$14,005,829.87

N.B.—Figures printed in italics are minus quantities.

## STATEMENT OF TRAIN MILEAGE

Year ending 31st December, 1913.	Main Line.	Year ending 31st December, 1914.
	Particulars.	
	Miles.	Miles.
111,857½	1.—Train miles run for Public Traffic	138,966
6,528½	2.—Train miles run for Maintenance, .....	4,539
	Total Train Mileage, ...	143,505
118,386	3.—Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour, .....	106,590
75,882	4.—Miles run for Loco purposes, .....	750
	Total, .....	250,845
	Fanling Branch.	
	Particulars.	
	Miles.	Miles.
23,021	1.—Train miles run for Public Traffic, ... ..	20,064
10,950	2.—Miles of engines shunting and standing in steam for traffic purposes at 6 miles an hour, .....	10,950
	Total, .....	31,014
33,971		

## ROLLING STOCK FOR THE YEAR ENDING 31st DECEMBER, 1914.

Tender or Tank.	Type.	No.	Cylinder.	Pressure per sq. in.	Tractive Force.	LOCOMOTIVE			Total Stock 1913.	Additions 1914.	Reductions 1914.	Total at end.	Actual Stock in run- ning order on the last day of the year.	REPAIRS AND RENEWALS.			Average Number un- dergoing Repairs or Renewals at any one time.
						lbs.	Tons.	cwt.						Repaired in 1914.	Renewed in 1914.	Undergoing or awaiting Repairs at end 1914.	
Side Tank	<i>Kitson</i> 2: 6: 4: 4' 8½" Gauge.	5	19" X 26"	180	24,724	89	15	4	1	0	5	5	4	0	2	1	
Saddle Tank	<i>Hudswell Clarke</i> 0: 6: 0: 4' 8½" Gauge.	2	14" X 20"	150	10,604	29	7	2	0	0	2	2	2	0	0	1	
Side Tank	<i>Hudswell Clarke</i> 0: 4: 0: 2' 0" Gauge.	2	6" X 10'	150	1,800	5	3	2	0	0	2	2	2	0	0	1	
Centre Tank	<i>Orenstein Koppel</i> 0: 4: 0: 2' 0" Gauge.	1	9¾" X 11¾"	150	4,338	10	0	1	0	0	1	1	1	0	0	0	
Loco Crane	<i>Wilson &amp; Co.</i> 0: 4: 0: 4' 8½" Gauge.	1	8" X 10"	80	...	15	0	1	0	0	1	1	1	0	0	1	
Total.....		11						10	1	0	11	11	10	0	2	4	

COACHING VEHICLES.  
4' 8½" Gauge.

	No.	Length in feet.	Tare.	Capacity; Passenger.	Total Stock 1913.	Additions 1914.	Reductions 1914.	Total 1914.	Actual Stock in running order on the last day of the year.	Repairs and Renewals.			Average Number undergoing Repairs or Renewals at any one time.
										Repaired in 1914.	Renewed in 1914.	Undergoing or awaiting Repairs at end of 1914.	
First Class Carriage ...	1	60' 11"	36	50	1	...	...	1	1	1	...	...	1
Second Class Carriage ...	1	60' 11"	34	84	1	...	...	1	1	1	...	...	1
First and Second Composite Carriage	2	60' 11"	35	68	2	...	...	2	2	2	...	...	2
First and Second Composite and Buffet Carriage ...	1	60' 11"	35	60	1	...	...	1	1	1	...	...	1
Third Class Carriage ...	8	60' 11"	32	120	8	...	...	8	8	8	...	...	1
Third Luggage and Brake ...	2	60' 11"	35	84	2	...	...	2	2	2	...	...	2
Kitchen Luggage and Brake ...	1	60' 11"	35	...	1	...	...	1	1	1	...	...	1
Total ...													

2' 0" Gauge.  
COACHING VEHICLES

	No.	Length in feet.	Tare.	Capacity; Passenger.	Total Stock 1913.	Additions 1914.	Reductions 1914.	Total 1914.	Actual Stock in running order on the last day of the year.	Repaired in 1914.	Renewed in 1914.	Undergoing or awaiting Repairs at end of 1914.	Average Number undergoing Repairs or Renewals at any one time.
8 Wheeled Bogie First Class Carriage	1	24' 0"	3.5.0	16	...	1	...	1	1	1	...	...	1
" " " " " and Brake	1	24' 0"	3.5.0	10	...	1	...	1	1	1	...	...	1
" " " " " Compo ...	1	24' 0"	3.5.0	12	...	1	...	1	1	1	...	...	1
" " " " " Third " " " " " Carriage	3	24' 0"	3.5.0	24	...	3	...	3	3	3	...	...	1
					Cwt.	Cub. Feet.							
Open Sided Carriages ...	...	9' 0"	11	10	6	...	6	...	...	...	...	...	...
Total, ...													

GOODS VEHICLES.  
4' 8" Gauge.

	No.	Length in feet.	Tare.	Carrying Capacity (Tons)	Total 1913.	Additions 1914.	Reductions 1914.	Total Stock end 1914.	Actual Stock in running order end 1914.	Repairs and Renewals.			Average number undergoing Repairs or Renewals at any one time.
										Number Repaired 1914.	Number Renewed 1914.	Number undergoing or awaiting Repairs on the last day of the year.	
30-Ton Covered Goods ...	5	35	15	5	30	5	...	5	5	5	...	...	1
30-Ton Rail Bogie ...	2	35	13	8	30	1	...	2	2	2	...	...	1
*30-Ton Open Goods ...	5	35	14	8	30	6	...	5	5	5	...	...	1
15-Ton Covered Goods ...	24	19	8	10	15	24	...	24	24	24	...	...	...
15-Ton Cattle Trucks ...	2	19	8	10	15	2	...	2	2	2	...	...	1
15-Ton Open Goods ...	10	19	7	16	15	10	...	10	10	10	...	...	2
15-Ton Goods Brake Van ...	2	19	15	...	15	2	...	2	2	2	...	...	2
<i>Goods Vehicles 2' 0" Gauge.</i>													
Steel Sided Goods Wagons ...	3	9' 0"	...	12	60 Cub Feet...	3	...	3	3	3	...	...	1
Wooden Goods Wagons ...	...	9' 0"	...	10	...	...	6	...	...	...	...	...	...
Total, ...													

\*One 30-Ton Open Goods converted into Rail Bogie.

## COACHING TRAFFIC CANTON-KOWLOON RAILWAY.

— Single Fare per mile		1st Class. About 8 cents. Amount.		2nd Class. About 4 cents. Amount.		3rd Class. About 2 cents. Amount.		Total. 1914. Amount.		Previous Year.	
		No.	\$ c.	No.	\$ c.	No.	\$ c.	No.	\$ c.	\$	c.
I.—Passenger.	No.										
Ordinary, .....	1,420	1,846.84		8,030	5,309.06	317,168	74,622.31	326,618	81,778.21	83,131.41	
Government,...	530	756.65		2,358	1,519.55	7,303	2,615.30	10,191	4,891.50	5,868.75	
Monthly, .....	35	970.35		51	687.48	439	3,988.27	525	5,646.10	3,554.37	
Excursion, ...	4,168	6,228.75		4,457	3,949.65	5,891	3,460.06	14,516	13,638.46	11,876.55	
Excess Fares	199	158.85		546	185.10	9,671	1,858.30	10,416	2,202.25	2,218.20	
Total, .....	6,352	9,961.44		15,442	11,650.84	340,472	86,544.24	362,266	108,156.52	\$106,649.28	
Previous Year, 7,375		10,763.44		12,597½	9,805.77	330,392	86,080.07	350,364½	106,649.28		
Luggage fees, etc....									4,603.44	3,750.92	
									111,352.72	110,400.20	
Deduct payment to Star Ferry on account of Ferry Service									2,954.14	2,631.51	
								Total,...	\$108,398.58	\$107,768.69	
Next foreign Coaching Earnings									215,045.63	187,928.68	
								Total,...	\$323,444.21	\$295,697.37	

## GOODS TRAFFIC

Particulars.	Current Year.	Previous Year.
<i>Local Earnings</i>		
General Merchandise, ... Piculs.		
107,926.20 \$ 8,985.38	\$ 7,346.50	
Government Stores, ... Piculs.		
4,934.58	623.44	696.45
Live Stock, ... Number		
2,333	512.43	649.91
Total, .....	\$ 10,121.25	\$ 8,692.86
<i>Foreign Earnings</i>		
10,690.98	9,585.91	
	\$ 20,812.23	\$ 18,278.77

(16.75 Piculs are taken as the equivalent of a ton.)

## SUNDRIES

Particulars.	Current Year.	Previous Year.
Rents of Land, House, etc.,	\$ 9,574.14	\$ 8,820.47
Rents—Stall Holders and		
Money Changers at Stations,	215.00	296.50
Hire of Engines and Wagons		
(Maintenance), .....	2,325.04	2,918.91
Water Supply to Steam		
Launches, .....	313.00	441.85
Proceeds by sale of Lost		
Luggage, .....	9.25	3.00
Privilege of Loading & Un-		
loading at Stations, .....	264.00	264.00
Miscellaneous, .....	161.16	.20
Total, .....	\$ 12,861.59	12,744.93

## CANTON-HANKOW RAILWAY

## Hupei-Hunan Section

Tenders are called for the supply of the following Steel Bridgework, viz:—

5	Dock Girders	15 — ft.	Span.
8	do	20 — ft.	"
18	do	30 — ft.	"
6	do	40 — ft.	"
18	Through Trusses	150 — ft.	"
9	do	200 — ft.	"

Forms of Tender, with Conditions of Contract and Specifications, can be obtained on payment of \$5 at the office of the Director General, Han-Yueh-Chuan Railway Administration, Hankow, or on payment of an equivalent fee at the offices of the Railway's Consulting Engineers or Representatives in London, Paris, New York or Berlin.

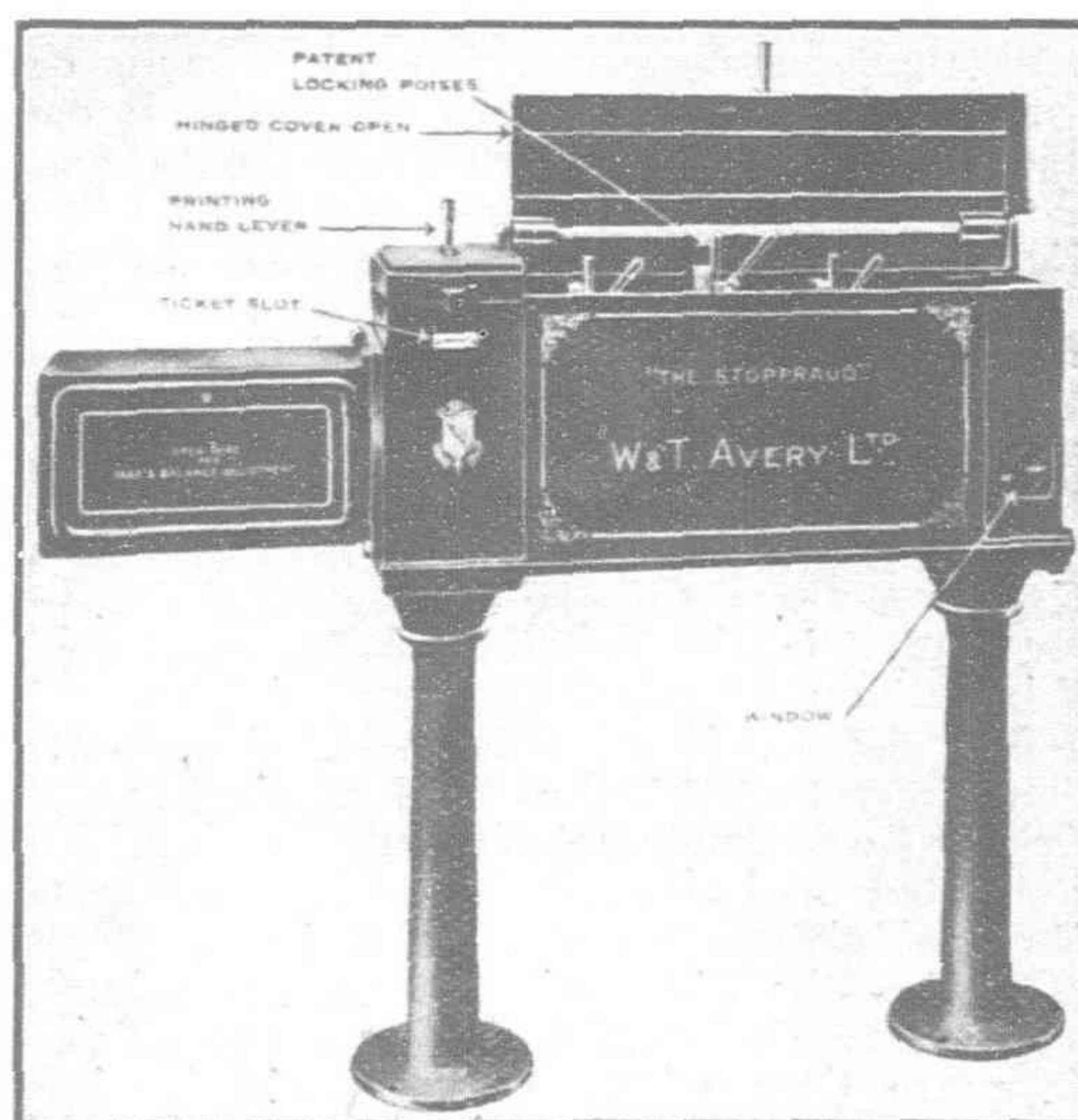
Designs are to be submitted with each Tender, which must be on the official form supplied, in sealed covers marked "Tenders for Steel Bridgework, Canton-Hankow Railway, Hupei-Hunan Section." Addressed to the Director General, Han-Yueh-Chuan Railway Administration, Hankow, or, if abroad, to the Railway's approved Agents.

No Tenders will be received after 6 P.M. on the 7th December, 1915, when they will be opened in the presence of Tenderers or their Representatives—Adv.

## Important Improvement in Weighing Apparatus.

When one considers that practically every merchant's business calculations depend absolutely upon weighing accuracy for their success, it is a matter for surprise that the plan now adopted by the majority of leading British business houses, railways and Government Departments is not universally followed. Recognising that inaccurate weighments must inevitably lead either to loss of trade or to direct loss of profits, the keen practical business man has learned the wisdom

of placing all his weighing apparatus under the care of one or other of the leading weighing machine makers, who periodically test, and where necessary adjust and repair any type and make under an annual maintenance contract. The loss in overweight required to turn a "stiff" weighing machine, may be, in itself, trifling, but the sum of these overweightings will amount to a serious loss in a year.



"STOP LOSS" WEIGHING MACHINE.

Another grave danger is the carelessness and, occasionally, fraud on the part of employees.

The machine here illustrated is the latest designed by the well-known and leading makers of weighing, counting and testing apparatus, W. & T. Avery, Ltd., of Birmingham, and is a device which prevents either fraud or carelessness. The "Stopfraud" apparatus is designed to print the weights on a ticket, the important point being that the

ticket can be printed only if the weighman has obtained perfect equilibrium of the steelyard. If a weighman does not remove surplus weight the evidence of his carelessness goes upon record. In cases of repetition weighments the poises can be set, the machine locked and any untrained employee told off to check out any number of packages; it being quite impossible for overweight bags or lots to be sent out, since no ticket can be printed for weights that are even a fraction in excess of the variation allowed in setting the machine.

The method of working is shown in the illustration of the open machine. When the hinged cover is open, the printing hand lever is locked, and the ticket slot closed. By moving the patent locking poises along a fixed bar the concealed poises are shifted until the steelyard is seen at the window to be in equilibrium. The hinged cover is then closed and only when perfect balance is obtained, can one release the printing hand lever, and open the ticket slot.

It is not claimed that every refinement of the "Stopfraud" machine is required by every merchant who uses a weighing system in his business, but that with its various attachments the "Stopfraud" offers many advantages heretofore unobtainable, and that to many merchants, one or other of these refinements may be so valuable that the machine deserves the immediate and earnest attention of all who rely upon weighing as a means of putting their theoretical calculations into practical effect. Scalemaking being quite a special branch of engineering, the value, efficiency and convenient distribution of the Avery Service fully merits the appreciation it receives and the success it has attained.

## Change in Goulds Selling Organization

The Goulds Manufacturing Company of Seneca Falls, N.Y., manufacturers of pumps for every service, announces a change in the management of its Sales Organization. Instead of having the entire organization in charge of a single executive, the selling work has been divided and is now directed by Mr. R. E. Hall, former Manager of the Boston Office, and Mr. W. E. Dickey, former Manager of the New York Office, both of whom are Vice-Presidents of the Company. Mr. A. H. Whiteside, former Sales Manager has resigned.

Mr. Hall, who is now located at Seneca Falls, has charge of the general work of the department and in addition looks after the business in all the Northern, Central West and Northern Pacific States including the territories of the Boston, Seneca Falls and Chicago Offices. The Export business is also under Mr. Hall's supervision.

## Yokohama Building Y. M. C. A.

The Yokohama Young Men's Christian Association has concluded a contract with the American Trading Company, Tokyo, for a new Y. M. C. A. Building in Yokohama. The site was purchased some time ago at Tokiwacho, just opposite the Yokohama park. The ground contains 181 tsubo, for which the Y. M. C. A. paid 15,000 yen. The cost of the new building will be 58,000 yen and American business men have already pledged 70,000 for the new building and ground and a pledge of 14,000 yen has been given by Japanese supporters. Since the building, ground, equipment and maintenance will cost 122,000 yen, at least another 40,000 yen will have to be raised in Japan by the association.

The new building will be a five story structure of concrete. The kitchen and dining room will be on the ground floor. Shower baths and lockers are also provided on the same floor. On the first floor will be the social hall, library, billiard and music rooms. There will also be a public hall, a meeting room for general meetings and a gymnasium on the second floor. The third floor will be used for educational purposes. On the fourth floor will be a dormitory. The work of construction will be completed in May next.

# THE CHANGCHUN-KIRIN RAILWAY AND ITS STRATEGIC MEANING

It is now exactly ten years ago since the Chinese Government decided on the construction of the Changchun-Kirin Railway in order to facilitate communication between the Capital of Kirin province and the other principal towns of the then Chinese Empire. The line has only been open to traffic for some two years, so that roughly it has taken eight years to get into working order a railway only 80 miles in length. Such a thing is only possible in China where forces are at work which defeat every known system of calculation.

## The History of the Line

The whole history of the Kirin Railway discloses a pitiable tale of hesitation heavily interwoven with political intrigue. Some ten years ago a Chinese engineer was sent to Kirin and was instructed to collect material for the eventual construction of the Railway. He at once set to work purchasing large quantities of timber which is both abundant and cheap in these parts, but all these materials were either lost or destroyed when the Japanese became masters of the South Manchuria Railway and occupied Changchun. As the Chinese Government were then very short of funds, they consented to enter into an agreement with the Japanese Government by which the latter agreed to lend the new Railway Company half of the necessary capital, the yearly interest being fixed at 5 per cent. In return China agreed that the chief engineer and chief accountant should be Japanese. The chief engineer chosen was Mr. Magario, formerly of the Government Railways of North China, who was well experienced in engineering matters and methods in the North.

## The Chino-Japanese Agreement of 1909

Even after this loan had been made things did not move very quickly and there was a great deal of chopping and changing with the directors, all of whom did not show much energy in pushing on construction. When in September, 1909, a new Chino-Japanese agreement was concluded which had special reference to the Korean-Chinese Boundary, the line was still in course of construction. Nevertheless in this agreement the Japanese secured China's consent that the Changchun-Kirin Railway should eventually be extended to the southern boundary of the Yenchi or Chientao district, connecting at Hoi-yang with a Korean railway. This extension was to be effected on the same terms as had been agreed upon for the Changchun-Kirin Railway. Even now the present railway, though in thorough working order, cannot be said to be thoroughly completed. A projected tunnel through the Tung Mung Ling has still to be built, the delay being caused by the want of capital, whilst several new bridges are also necessary on account of the floods which yearly take place in these districts and continually disorganise the railway traffic.

The capital expenditure on the railway is in round figures 5 million dollars, the Japanese having contributed some 2 million 200 thousand Yen, which is practically half the amount. According to returns furnished me the line is now self-supporting, and if it were not necessary to make further outlays in capital expenditure for the purchase of rolling stock, ballasting and general improvements, which—owing to the lack of any liquid funds—necessitates the disbursing of the monthly receipts, a profit would be made even when putting aside the interest payable on the Japanese loan.

## The Traffic of the Railway

The highest monthly returns are \$120,000 (during December and January) and the lowest \$70,000, goods returns accounting for 65 per cent to 70 per cent of the total. The monthly

expenditure is about \$60,000 for purely running expenses and not including any sum set aside for payment of interest. In round figures the total returns for 1914 were \$900,000 and the total running expenses \$700,000. The smallness in passenger returns—from 30 per cent to 35 per cent of the total amount—demonstrates clearly that the population living in these districts is but small and that there is much land still to be opened up. The principal goods exported are timber in the summer months; and grain, cereals and tobacco in the winter months. This year there is a big falling-off in the export of timber; as last year all timber merchants had heavy losses, many becoming ruined owing to the floods and the carrying away down stream of innumerable rafts, which became flotsam and jetsam, lost forever to their owners. This year these dealers in timber have been unable to send even a quarter of the woodmen they usually dispatch to the upper reaches of the Sungari to hew trees which are at once cut into logs and bound together, the rafts being floated down stream as far as Kirin, where the Railway Co. has built a special siding close to the River bank to load this valuable cargo. Notwithstanding the small returns that are now shown by the Changchun-Kirin Railway, it is not a difficult matter to predict a very successful future for this line especially when the line becomes extended to the rich Yenchi district which lies some 800 li to east of Kirin and some 2 degrees south in latitude.

## Possibilities of the Railway

Nobody knows better the possibilities of the railway and its extension than the Japanese themselves, for there have been for years past innumerable Japanese agents studying all conditions existent in this rich and fertile country and visiting even the most remote districts. It is interesting to follow step by step the deliberate manner of action of the Japanese, and it is not difficult to perceive that the object they have in view was born many years back and that each step taken has been caused by an opportunity presenting itself. Their first *pas* was to secure a share of the building of the Kirin-Changchun Railway and dates back soon after the signing of the Portsmouth Treaty. The second opportunity occurred in 1909 when the famous Chientao Controversy took place and when Japan acquired the substance for what she was fighting, although China gained a nominal diplomatic victory as a result of the Chino-Japanese Agreement that was signed stipulating for the extension of the Kirin-Changchun Railway to the southern boundary of Yenchi district and its connexion at Hoi-yang with a Korean Railway and the admission of Japanese capital in the building of the extension. When these negotiations were going on and before the actual agreement was signed, the then Viceroy of Manchuria telegraphed to the Peking Government pointing out that if China consented to the construction of a line from Kirin to Hoiyang—no matter what the conditions might be—the whole of Southern Manchuria would speedily be enmeshed in a network of Japanese lines whilst China would be left without any room for the construction of railways on her own account.

## Russian Criticism

Russian special correspondents in the East for the more important Petograd and Moscow newspapers did not overlook the importance of the agreement that had then just been signed; they pointed out in very forcible terms that the construction of these railway lines gave a final preponderance to Japan over Russia in a strategical sense, which would enable Japan to pour an army through

Northern Korea and Manchuria into the Ussuri district in a very few days, besides diverting freight from the Chinese Eastern Railway and Vladivostok to this parallel but more southern line terminating at the port of Chongjin in northeast Korea. The report made by the Vladivostok Bourse Committee to the Russian Government when this agreement of 1909 became a *fait accompli* was likewise a lengthy and remarkable document. It pointed out, without any mincing of words, that when once the projected line from northeast Korea, through the rich Yenchi district which lies adjacent to the Russian frontier to Kirin became an accomplished fact, the whole of the territory in the direct neighbourhood of this new Railway would fall *in toto* under the influence of Japanese enterprise. The third step taken in connexion with this railway coincides with the new Chino-Japanese Agreement in May last, when it was agreed that the Chinese Government would make a fundamental revision of the Kirin-Changchun Railway Loan Agreements, taking as a standard the provisions in railway loan agreements between China and foreign financiers and "when in future more advantageous terms than those in existing loan agreements are granted to foreign financiers in connexion with railway loans; the above agreement shall again be revised in accordance with Japan's wishes."

## The Japanese Coup and Publicity

Though the demands accorded to the Japanese are much more moderate than the full text of Japan's ultimatum to China as officially announced by the Tokio Foreign Office on the 7th May and which read as follows, "The control and management of the Kirin-Changchun Railway shall be transferred to Japan for 99 years," nevertheless Japan has driven her wedge still further in as far as Central Manchuria is concerned, and no doubt would have driven it still deeper in had not the Chinese Authorities had recourse to the powerful medium of the Press. In the past and notably in the Antung-Mukden Railway Question, Chinese officials have shown their reluctance to appeal to the world in general through the Press, whilst on the other hand Japan, who invariably shows finesse in presenting her side of the case, has been able to drum up a fairly strong feeling in her favour in both England and America. China can only blame herself for having maintained silence, and as the experience has been dearly paid for let us hope that she has finally learnt her lesson.

## "Reforms" in the Railway

The "reforms" that are to be introduced on the Changchun-Kirin Railway are likely to take place at a very early date, as the Treaty relating to South Manchuria came into operation on the 25th August. It is expected that, though the Chinese Director will still retain his place, the heads of departments will be replaced by Japanese and that these will be drawn from the present staff of the South Manchuria Railway; the present Traffic Manager, Locomotive Superintendent, Stores Superintendent being among those who will leave. Under the plea of effecting economy the present T'ou Ta Kon station, that is quite near the South Manchuria Terminus in Changchun, will be done away with and all trains will run into the South Manchuria Railway main line platforms. This being the case, the actual terminus of the Changchun-Kirin Railway will be transferred from the present principal Changchun station, which lies outside the East Gate of the native city, to the Japanese station at Changchun.

With the appointment of a Japanese Stores Superintendent, as is the case on the South Manchuria Railway, Japanese will receive preference when railway material and stores are required by the railway. A revision is also likely to be made in the present Railway Tariff and no doubt this Tariff will be drawn up from the S. M. R. model. The present Japanese Engineer-in-chief, Mr. Magario, is likely to be replaced by another Japanese engineer from the South Manchuria Railway, for the acting Director of the Bureau of Technics of that Co., Mr. Hori, has on several occasions shown himself not in accord with the work accomplished by Mr. Magario and has expressed his views through the medium of the Dairen Press as well as the Railway Organ published in the English language (the *Manchuria Daily News*), on the necessity of reconstructing all bridges along the Changchun-Kirin line. Both the Japanese in charge of the active management of the line will therefore be changed and it may be fully expected that construction work on the extension to Yenchi and the Korean frontier will soon begin, the line having been surveyed by the Japanese several years ago and once again only three years back, so that no further preliminary work in surveying is required.

#### Baron Nakamura's Visit

It is a significant fact that the Changchun-Kirin Railway is included in the Itinerary of Baron Nakamura, the Governor-General of Kuangtung Leased Territory, who is making a tour of inspection over the whole of the South Manchuria Railway System. It is a conclusive proof of how both this railway and Kirin are now interesting Japanese diplomats, and that the day is not far off before they pursue an active and forward policy in pushing their interests into the heart of these districts. Allusion must be made to a coal mine which is situated on the railway not far from the Yinchengtse station and owned by a Chinese Company who have been working it in a primitive manner. It is said to be a promising mine; but as is the case with most Chinese-owned concerns the amount of capital raised being totally insufficient for working in an intelligent manner, the Company has now come to an arrangement with Russian officials of Chinese Eastern Railway who are willing to advance a certain sum of money on the understanding that they shall have the option of buying all coal mined at a fixed price per ton, the mine not being far away from the Chinese Eastern Railway. A light railway can be easily built from the mine to a point on this Russian owned railway.

The present terminus of the Changchun-Kirin Railway is some 3 li outside the northeast gate of Kirin city. Between lies the newly-laid out foreign settlement where all foreigners will reside. A large bridge will have to be built to open the Sungari when once construction work on to Yenchi-Hoi-yong is started. The distance between Kirin and Yenchi is some 800 li from Yenchi to the Chinese side of the Tumen River opposite Hoi-yong which is already connected by a railway to Chhyongjin, the new port of Northeast Chosen. The new railway even before it is completed will be used to convey the native products of Yenchi to the port of Chhyongjin, which is admirably located and protected from the elements and is open all the year round, the anchorage being so good that vessels up to 10,000 tons displacement can approach close to the shore. Since 1909 the Japanese Government has assigned large sums of money amounting to some millions of Yen towards the improvement of the port which is likely to become not only one of the principal Korean ports but one of the world's trade ports. For, with the completion of the Kirin-Yenchi-Hoi-yang extension, all products from both Eastern and Northern Manchuria can be more advantageously shipped through Chhyongjin than through Vladivostok, Dairen or Newchwang. At Hoi-yang the Japanese Government have built enormous barracks and it is the Staff-headquarters for a brigade of Japanese troops. The distance

from that town to Yenchi, the principal town of the Yenchi (Chientao) district, is about 100 li, and this is bound to play a big role in the future. It is daily growing in importance and has many Japanese subjects as residents, besides a Japanese and a Russian Consul. There is now also established there a Chinese Custom House, whilst many Kirin native hongs have opened branches there. The Chinese Post Office has a courier service which is maintained all the year round.

#### The Chientao District

The agricultural products of the Chientao district are estimated in millions of dollars and as there are still many uncultivated tracts of arable land, with the advent of the railway an increase in cultivation will only be a natural result. The country between Kirin and Omoso and from Omoso south-eastwards, is but sparsely populated and but slightly cultivated, principally on account of lack of means of

#### Gold Mining in Heilungkiang

The Chinese Government has decided to establish a Gold Mining Department in Heilungkiang (Manchuria) to take charge of the gold mining affairs in that province, this action being the result of a report by the Ministry of Finance to the following effect:

The Ministry of Finance begs to submit that by Article 9 of the provisional regulations of the Gold Mining Bureau the said Bureau shall establish branch offices at suitable places where an abundance of gold, silver, copper and other ores are produced. Now we have found that gold ore in the province of Heilungkiang is exceedingly rich. All the regions along the river from Chichienho on the north-west to Taipingkou on the south-east for a distance of several thousand li, are auriferous. There have been five gold mining yards, the Muho Yard, Kuma Yard, Kwantu Yard and Chichienho Yard, which are official concerns, and Chingkou Yard, a semi-official undertaking. The so-called official yards are really licensed private pits, which give a certain percentage of their output to the Government; and the semi-official yard is very much of the same character as far as the collecting of gold ore per capital is concerned except that at the beginning a certain amount of official funds was put in as capital and the yield is divided proportionately. During recent years the total annual output of gold exceeds 100,000 ounces, yet what the Government has been getting is very insignificant. The net profit from this source in the best year only amounts to about \$400,000. It is a most regrettable fact that the miners sell their ore to a neighbouring country at very low prices, thus letting them make the profit which should belong to China.

Another fact is that the miners are allowed to open pits and no restrictions have been placed on them. The consequence has been that they seldom dig deep enough and change localities too often. As these primitive miners leave the waste sand piled up along the river beds the task of those who follow them is made very difficult. Within a few years, therefore, an excellent mining area may be rendered worthless. These conditions should, therefore, be immediately remedied by having special officials actually to control the operation. It is now proposed that a branch Gold Mining Bureau should be established at Heiho, a central locality in the province of Heilungkiang. We request that a Chief of this branch bureau be appointed to draw up a general plan for the whole area respecting the digging of sand, transportation and storage of foodstuff and improvement of blasting and refining. We also propose that a resident director be appointed constantly to visit the different mines and to be on the grounds so that he may supervise the works. If this meets with your approval the Ministry will at once instruct the officials so appointed to hasten to the said regions to establish the said branch office and take charge of the official yards. They shall also be responsible

communications. In certain parts the nature of the country is mountainous, so that for the first few years of the life of the new railway, no wonderful returns are likely to be made; the country however is full of possibilities, once properly populated. The soil is rich, admitting the sowing of all kinds of grains and cereals, whilst in the mountainous districts timber abounds. There are several smaller rivers flowing through all this part of the province, most of them being tributaries of the Sungari, the Nintan-Chiang (Hurka River) and the Tuimen, all of which admit cultivation in their valleys.

The whole future of these districts is full of possibilities that must not be overlooked, and which like the question of the waste lands west and north of Changchun should receive the instant attention of the Peking Government. —By a Special Correspondent of the Peking Gazette.

for the supervision of the operations in the semi-official yard at Yuchingkou so that effective reforms may be instituted.

As to the necessary steps to be taken after the establishment of the said branch bureau we beg to enumerate the following:—Encouragement should be given to the miners so that more and more men may offer themselves for the work; careful watch be kept in these regions so that all of the gold secured may be bought, improvements should be made to the pits already dug, and as to the more productive regions, regulations should be drawn up, waterways be opened and the area divided into lots and opened one by one so that the valuable regions may thus be protected and made to yield real profit. Experts in gold mining operations should also be sent to the various gold producing regions to prospect new mines and ascertain the practicability of working the mines partly by modern methods.

Respecting the foregoing the Ministry has instructed Chu Chao, formerly Chief of the Finance Bureau of Fukien, and Liu Wen-feng, the official specially sent to Heilungkiang to investigate into the gold mining affairs, carefully to consider them. If the methods stated above are carried out the receipts will be multiplied, and while the national revenue will be increased, a large quantity of gold will be kept in the country, a fact not a little beneficial to the currency system.

As regards the purchase of gold dust and the transportation and storage of food stuffs, a capital of \$400,000 shall be needed. It is proposed that this will be raised in instalments from the 5 per cent of the receipts from official properties of Fengtien pledged by that province. Meantime the Bank of China will be asked to advance a loan for immediate requirements and to establish branch banks in the regions of Peiho, etc., for the circulation of paper money and the restoration of national rights. As to the provincial receipts from gold mining to the amount of more than \$400,000, as provided in the estimate of Heilungkiang, the said province will be reimbursed this amount each year after the mines are transferred to the control of the Ministry of Finance, so that the administrative expenses may be duly met. Again, as these regions are far out on the border and are therefore wild in nature and cold in climate, the officials shall need the protection of troops and police. We request that the local officials be instructed to give adequate protection and not to adopt an indifferent attitude. As to the prevention of corruption, etc., the Chief of the Branch Bureau shall be held responsible, etc.

The President's reply: The petition is noted. The proposal to establish a branch Bureau of Gold Mining in Heilungkiang is hereby approved. As to the request for the appointment of . . . separate mandates have been issued. The rest shall be done as proposed; and the said Ministry shall advise the superior local officials of the province to order the troops and police to give the necessary protection.

# ENGINEERING, FINANCIAL AND INDUSTRIAL NEWS

## RAILWAYS

**Hankow-Canton Line.**—Considerable light upon the general railway situation in China, reviewed from a construction standpoint, is contained in a letter from an engineer employed in the survey of the American section of the Hankow-Canton system to Consul General George E. Anderson of Hongkong. This letter says:

"It is now quite certain that our section (the American section) will surely stop work in the near future. The British section (Kwangtung border to Hankow) and the German section (Hankow to Ichang) will both do some construction. The British will build from Hankow to Changsha (capital of Hunan Province), while the Germans will only build a feeder line (of about 75 miles) to the Peking-Hankow Railway. This is the final agreement between the Chinese Government and the bankers. The Hankow-Canton line must be built. Germans agree to give up their section if they could use the money now in the Hankow German bank to build this feeder line to the Peking-Hankow Railway, while the American section will be abandoned (of course due to lack of funds). Now all the loan will be concentrated on the British section and the Germans will get a small part of it to build a small line. So you see we shall have to quit here very soon. Just before the war we thought we were the luckiest ones among the engineers, for if this line is ever built it would mean a chance of a lifetime."

Business in some lines of railway material will have to be done on a considerable scale in the near future to maintain lines now in operation. The indications are that American manufacturers will have an especially favorable opportunity to secure much if not most of this business. Little may be expected in the way of new work.

**Chinese Eastern Railway Forts.**—The Tokyo Tsushin reports that the management of the Chinese Eastern Railway Company, with permission of the Russian government, has decided to build redoubts at Chanchun and other places where the railway has bridges, for the protection of the railway line.

**Nanchang-Kiukiang Loan.**—According to a Peking dispatch to the Japan Advertiser owing to disputes with a Japanese company over loans, the Government of China has appointed Mr. Shen Chao-chih chief director of the Nanchang Kiukiang line. The railway company owes a Japanese company said to be Messrs. Okuma Company 3,000,000 dollars. This is to be adjusted, otherwise the railway company will become another San Yeh Ping corporation in the Yangtze Valley. The government did not take over this line, but it wants to adjust its affairs without further delay. The Japanese want to control the financial department of the line as security for their loans.

**Japan's Coronation Cars.**—The freight cars now in general use in Japan are too small to carry the Imperial state carriages from Tokyo to Kyoto, consequently 26 new cars have been constructed at the Shimbashi railway works. A "trial loading" was held at Shiodome station with carriages sent to the station by the Imperial Household Department, and a trial run of the new freight cars was made between that station and Numadzu

station. The total number of the freight cars to be used for coronation purposes by the Imperial Household Department is 550.

**Japan Postpones New Railways.**—In view of the steady reduction in the receipts from various sources, the Railway Board of Japan is reported to have decided to postpone planned works involving expenses of ¥3,000,000 during the present fiscal year.

**15,000 Japanese Cars for Russia.**—According to the Tokyo Nichi Nichi, the Russian government has placed an order for 15,000 railway cars in Japan. The Japan Car Manufacturing Company, the Osaka Car Manufacturing Company, the Kawasaki and the Mitsu Bishi Companies are conferring on the order. The manufacturers expect to prepare as many as their shops will produce and will ask the Imperial Railway Bureau to complete the order.

The maximum yearly production from shops of these companies and the Railway Bureau is far below the required number.

**Yokohama to Buy Trams.**—It is reported that a movement is afoot for the municipalization of the Yokohama tram service, which is now a private enterprise. At the special general meeting of the Yokohama Electric Railway Company, Mr. Sojiro Horiya, a large shareholder, urged that it would be more profitable for the shareholders to sell the plants and business to the Yokohama municipality. The municipality some time ago planned to purchase the plants and business of the present Yokohama Electric Railway Company, and also lay down new lines. The plan was dropped as the 50 yen paid up shares were quoted as high as 65 yen. The business of the company has not been so prosperous lately and the market value of the shares has now fallen to 39 yen. The municipal assembly will advocate the purchase but its realization is a question of time and money.

**S. M. R. Traffic Returns.**—The South Manchuria Railway Traffic Returns for the month of August total ¥1,157,015.53, a daily average of ¥37,323, which is an increase of ¥1,070.62 over the corresponding period of last year. The total traffic receipts from April last to the end of August reached ¥8,860,773.07 a net increase of ¥1,110,799.

**Railroad for Negros.**—A corporation has been organized with a capital of \$250,000, all private Filipino capital, to construct a railroad on the Island of Negros. The railroad will traverse the sugar district. Surveyors are already at work on the right of way. It will traverse the northern part of Negros between the port of Escalante, on the east, and Pulapandan, on the west coast. The entire cost of the line is to be \$700,000 gold. At present the company is organized with a capital of \$250,000, of which \$150,000 has been paid in. As much construction work as possible will be done with the original capital, and then first and second class mortgage bonds will be issued to provide funds to extend the line.

**Australia's New Railways.**—The Premier has received from the Director General of Public Works a memorandum respecting the areas of Crown land which the Government will be in a position to throw open upon the con-

struction of the Mirrool-Hillston and Barmedman-Hillston lines of railway. The Director General states: "The two railway proposals are closely related regarding the country to be served. For the expenditure of \$2,570,000 in the construction of 55 miles of railway (each proposal being 72½ miles in length) there would be available for closer settlement an area of 2,275,000 acres of Crown land. If, by the construction of these two lines, the Crown land is increased in value by \$1.20 per acre, the amount would aggregate \$2,750,000, a sum sufficient to pay for the cost of construction."

**Indo-China's new Roadbed.**—By decree of the Governor General of Indo-China dated May 25, 1915, a contract was approved with M. Emile Mayeur, entrepreneur, Saigon, for constructing the roadbed of the Pnompenh-Tonleap section of colonial route No. 1, a new road to be built from Saigon to Pnompenh, the capital and chief city of Cambodia. The contract price is 700,000 piasters (nearly \$350,000). This does not include bridges, which are let by separate contract, but it does include culverts, the value of which is estimated at about \$10,000. The country is low and marshy, and in construction of this road there will be more filling than grading. Most of this work will be done by coolie hand labor. The road will ultimately be built up with Bienhoa stone or native granite. Contracts for construction of bridges are let from time to time. Usually one or two months' notice is given in the local official publications to those who wish to submit sealed bids. The contracts are invariably granted to local firms. MM. Brossard et Mopin, entrepreneurs, Saigon, get most of the contracts. The country is intersected with arroyos, bayous, and canals, and subject to frequent inundations. Consequently many bridges are necessary and many of them must be long and strong. Those recently constructed have been of iron and steel, with foundations of reinforced concrete. Cement is one of the leading products of Tonkin, but the structural iron and steel must be imported. It has come mainly from France.

## SHIPPING

**New M. M. Steamer for China Run.**—The Messageries Maritimes Co. has completed a new mail steamer, the André Lebon, for the China and Japan run. The new vessel's dimensions are: length, 538 ft.; breadth, 72 ft.; net tonnage, 19,260; gross tonnage, 22,000. It is a twin-screw steamer, fitted with quadruple expansion engines, developing 12,500 horse power and giving the steamer an average speed of sixteen knots. The accommodation for passengers is luxurious, with a spacious and magnificent dining hall, drawing and music rooms, passengers' elevators, children's recreation room, smoking and reading rooms, verandah-café, electric laundry, etc. The decorations are the work of the prominent French artist, Mons. Girette, the main staircase, or *escalier d'honneur* being a special feature. The André Lebon has accommodation for 200 first-class passengers, including four suites (*appartements de luxe*), 180 second-class, and 110 third-class. The steamer will probably leave Marseilles for the Far East some time in October, or early in November.

**T. K. K. to Canal Via Manila.**—Manila is to have another new steamship line from New

York to the Philippines via the Panama Canal, according to the latest information from the United States. The Tsushima Maru, Toyo-oka Maru, Takata Maru, Toyo-eshi Maru, Tokuyama Maru, and Toyama Maru, which are now temporarily on the European line of the Nippon Yusen Kaisha, will call at New York and Philadelphia on their homeward voyage, to take on cargoes of kerosene, etc. After their return, the New York line will be inaugurated this autumn with these vessels. Messrs. Henderson and company will act as agents of the company in New York, and other agencies will be established in New Orleans and Galveston.

The route probably will be New York, New Orleans, Galveston, Colon, Honolulu, Manila, Hongkong, Shanghai, Kobe, and Yokohama. During the war, Vladivostok will probably be made a port of call. Messrs. Warner, Barnes and Co., Ltd., the Manila local agents of the company, have not yet received definite information regarding the new line.

**Australians to Salvage Emden.**—To salvage the Emden as she lies on Cocos Island, the tender of Messrs. E. G. Barnley, E. S. Felton, G. M. Richards, and C. H. Read has been accepted by the Australian naval authorities. It is the intention of this syndicate to begin operations as soon as possible. They anticipate a complete save, their object being to take the Emden to Sydney under her own steam. The Commonwealth will then have the option of purchasing the warship, but if it does not the warship will be disposed of in some other way.

**Russian Ship Subsidies.**—The Russian Volunteer Fleet is to receive for 1915 the following subsidy: Vladivostok-Tsuruga and Vladivostok-Shanghai Lines, 558,000 rubles (Gold \$303,000); Vladivostok-Odessa Line, 178,000 rubles (\$92,000); Vladivostok-Okhotsk-Kamchatka & Tartar Straits Line, 511,000 rubles (\$263,000); Vladivostok-Peter the Great Bay and Coasting Line to Datta, 105,000 rubles (\$54,000.)

**Japan Gets Russian Ship Order.**—A shipping company at Odessa has decided to place with a Japanese dock company an order for the construction of several passenger steamers of a large type. The order includes eight steamers of the first class type. The company will order several steamers later for use in foreign service. The agents of the Japanese dock company at Odessa, together with Russian engineers, are drawing the designs.

**Dairen Shipping Returns.**—The shipping returns for the port of Dairen for last month, as furnished by the Marine Office, Dairen, give a total of 176 vessels with gross tonnage of 248,671 in entries and 180 vessels with gross tonnage of 257,111 in clearances, showing an increase of 4 vessels (but a decrease of 2,078 in tonnage) in arrivals and 5 vessels of 2,231 tons in departures over the previous month. In addition, two military transports with gross tonnage of 3,061 left this port during the same period.

The incoming steamers under the Japanese flag were 150 of 205,470 gross tonnage.

**Russia Buys Captured Ship.**—Negotiations have been in progress for several months between the Russian Shipping Trade Company and the British Admiralty concerning the purchase of several steamers, which formerly belonged to the Hamburg-America line and were captured by the British navy after the outbreak of the war. They will be delivered to the Russian company after the war is over. —Tokio Asahi.

**American Shipbuilding Declines.**—During the fiscal year ended June 30, 1915, there were

built in the United States and officially numbered 1,226 vessels of 215,711 gross tons, compared with 1,291 vessels of 311,378 gross tons for the same period of 1914. The principal vessels are two colliers built for Panama Canal trade, the Achilles and the Ulysses, of 11,081 and 10,910 gross tons, respectively. Other vessels over 5,000 gross tons are the John D. Rockefeller, a tanker of 8,374 gross tons; the Great Northern and Northern Pacific of 8,255 gross tons each, built for passenger service on the Pacific coast; the J. A. Moffett, 6,395 gross tons and the Lyman Stewart 6,054 gross tons, both tankers and were built on the Pacific coast. Only one large sailing vessel was built during the year, the Georgia, a schooner of 1,318 gross tons. In all, 23 vessels of over 1,000 tons each were built, aggregating 123,242 tons.

**New Japanese Liner.**—An Osaka dispatch reports that the Manila Maru, an addition to the Osaka Shosen Kaisha Tacoma line that has been under construction at the Mitsubishi Shipbuilding Yard at Nagasaki, has been transferred to the Osaka Shosen Kaisha by the shipbuilders. The displacement is 10,000 tons. Mr. Shioda, president of the Osaka Shosen Kaisha; Mr. Chiura, chief engineer, and several other leading officials went to Nagasaki from Osaka to receive the steamer, which leaves for Tacoma on October 28, according to the present schedule of the Osaka Shosen Kaisha.

**Japan May Subsidize Formosan Line.**—It is doubtful whether the Formosan Government-General will grant a subsidy to the steamship companies operating between Formosa and the South Sea Islands. Mr. Uchida, chief of the civil affairs section of the Formosan Government, however, strongly favors the subsidy, it is reported. Although the Government of the Island is inclined to curtail every expense for new undertakings, it is generally believed that it will finally grant a subsidy to the Japanese steamship companies that will make Takao, Formosa, a port of call. The first Japanese Company which is in position to enjoy the subsidy is the Osaka Shosen Kaisha.

**China Motor-Boat Traffic.**—The steady extension of motor-boat traffic on south China waterways, especially along the West River and its tributaries in Hongkong's trade field, noted for the past three years, continues in even greater degree, writes Consul General George L. Anderson, from Hongkong. It is announced that a motor-boat service has finally been established as far as P'ing Loh, on the Cassia or Fu River, about halfway between Wuchow and Kweilin, the capital of Kwangsi Province. The service of such boats has been extended up the West River very gradually. The service between Wuchow and Nanning was the first started, and it is maintained, with some slight interruptions, the year around, though at low water the difficulties of navigating the narrows and rapids in the river are great. During parts of the year a service is maintained from Wuchow to Lungchow, and this is considered fairly reliable.

The service from Wuchow to Po-seh was established comparatively recently, but it was thought impracticable to go farther up the river, though a British consular officer some time ago succeeded in reaching Kweilin in a small motor boat. The extension of the service 80 miles up this river to P'ing Loh is noteworthy, not only in that it marks a further step of development of such service generally, but it also reaches into country tapped by the headwaters of streams flowing into the Yangtze River through southern Hunan Province. All of these rivers carry freight and passengers by native boats, but the service in such vessels is so slow and uncertain that it means little in the extension of foreign trade. The more rapid and more regular services have had a stimulating effect upon all lines of business.

For the construction of the motor boats used on these rivers special designs have been made after several years of experience. Most of the boats are now constructed in the interior, but motors and equipment are usually purchased in Hongkong and are largely of English make. The type of motor required for such vessels has been described as a heavy-duty motor with few working parts, an ability to stand exposure and neglect and using kerosene for fuel.

**Holts Buy Indra Liners.**—The Holt Steamship Company of Liverpool is reported to have purchased from the Indra Line the steamers Indra, Indradeo, Indraghiri, Indrakuala, Indrasamha, Indrawadi, and Inverclyde. These steamers have hitherto been plying between New York and the Far East.

**O. S. K. Hears Minnesota Is Sold.**—An Osaka message received on September 3, repeated the report that the Great Northern liner Minnesota had been sold. This report says the purchaser is a London company and the purchase price \$2,000,000. The Osaka Shosen Kaisha received this message from their agency at Chicago. At the Great Northern office in Yokohama the report was neither confirmed nor denied. The Minnesota is to-day the largest vessel on the Pacific having a displacement of 37,500 tons. Built eleven years ago, she is 630 feet long, 73.6 feet beam and 56 feet deep from keel to saloon deck amidships. From the keel to the upper navigation bridge is 88 feet 4 inches. She has accommodation for 2,000 persons, including 318 cabin passengers and 1,500 steerage, in addition to a crew of 250.

**Japan's Shipping Tonnage.**—According to figures gathered by the Department of Communications, at the end of July there were owned in Japan 2,134 steamers with an aggregate tonnage of 1,594,894. Ships of over 1,000 tons each numbered 4,121, with an aggregate tonnage of 322,363 tons; sailing vessels of over 2,000 tons, 8,341, with an aggregate tonnage of 529,681; and ships of over 200 kaku capacity, 1,312, with an aggregate tonnage of 429,346 tons.

**P. M. Withdrawal and Japan.**—The withdrawal of the Pacific Mail steamers from the trans-Pacific trade will have a serious effect upon the Japan-America trade. The tonnage to be taken out of the service between San Francisco and Japan ports via Honolulu, is shown in the following table comparing the cargo capacity of P. M. liners and that of the T. K. K. liners.

P. M. liners.		Average ship-cargo capacity.	
		ment in Yokohama and Kobe.	
	Tons		Tons
Mongolia ...	15,000		6,500
Manchuria ...	15,000		7,000
Korea ...	8,700		4,000
Siberia ...	8,500		4,000
China ...	3,800		1,700
Total ...	51,000		23,200
T.K.K. Liners			
Tenyo Maru ...	6,500		4,550
Chiyo Maru ...	5,500		4,550
Shinyo Maru ...	6,500		4,550
Nippon Maru ...	3,000		2,100
Total ...	22,500		15,750

The P. M. liners assigned about 46 per cent. of their cargo capacity to shipments in Yokohama and Kobe, and the T.K.K. line about 70 per cent, the rest of the space being assigned to shipments from China ports. It follows that the withdrawal of the P. M. liners from the trans-Pacific business means a decrease of cargo capacity of 23,200 tons as far as Japanese trade is concerned. Even if

the entire capacity of the T.K.K. liners be devoted to the Japan-America trade, there would still be a shortage of 16,000 tons to supplement the loss. The probable result will be an increase of freight rates.

**New Chinese Gunboats.**—Last year the Chinese Government intrusted the building of some nine gunboats with the Yangtze Engineering Works (Ltd.), Hankow. Three boats have been launched. The boats are stated to be about 100 English feet in length, and are intended for river use, and, while smaller, are very like some of the river boats employed by foreign Governments.

**Japan's New Dreadnought.**—The Yamashiro, dreadnought, of 30,000 tons, which is now being built at the Yokohama Dock, will be launched about the middle of November. In trial runs the super dreadnought Fuso, in Inland Sea attained a speed of more than 23 knots.

**Philippines Seek Shipping.**—Governor General F. B. Harrison in an effort to obtain shipping facilities to replace the Pacific Mail has come into touch with other lines which are now operating or plan to operate in the trans-Pacific carrying trade. The new Chinese steamship company, which was organized recently, will make Manila a port of call, according to advices which Governor General Harrison has received from the American minister in Peking, and efforts are also being made through the secretary of war and the San Francisco Chamber of Commerce to induce the Java, China, Japan Lijn, a Dutch corporation, to inaugurate a service between Manila and San Francisco.

"When the committee of business men met with me in August," said the Governor General, "I stated I had confidential information that a new steamship line would probably soon be formed for trans-Pacific carrying trade and that I had received assurances as strong as could be given that Manila would be included in the ports of call of this new line. This information I received from the American minister in Peking during my visits to that city in May of this year, during which time I vigorously urged the inclusion of Manila as a port of call. The newspapers have now announced the formation of this Chinese company and I assume the information is no longer confidential."

## WATERWAYS AND HARBORS

**National Conservancy Bureau.**—The keynote of Mr. Chang Chien's report to the President on the work of the National Conservancy Bureau during the past year lies, says the *Peking Daily News*, in the following sentence:—"Its progress is hampered by the lack of funds." The progress of the Bureau means the carrying on of the many projects and schemes which if duly executed would give many provinces security against disastrous floods. As funds are lacking, the organization of the Bureau is far from being perfect. The staffs maintained by the principal and branch bureaux are very small, there being only six technical experts and clerks attached to the Peking Head Office. These technical experts have been kept very busy surveying the Huai River, the Liao Ho and the Metropolitan waterways. They have also been sent out to visit the Yangtze River and the sea dykes of Chekiang.

The first important step is the making of good maps of the river areas and with this end in view, Mr. Chang Chien submitted budget estimates to the Ministry of Finance for the Surveying and Mapping Department, which costs about \$2,700 per month. But the

July funds have not yet been paid by the Ministry of Finance.

Mr. Chang Chien aims to start the conservancy work on the Huai River, and make it the model for conservancy work in other provinces; and for that purpose a loan agreement was concluded last year with the American Red Cross Association. The said Association stipulates that Mr. Chang Chien must first provide them with a good map of the Huai-pei area so as to enable them to reach a decision whether the Huai River should flow into the sea or into the Yangtze River. The necessary funds for making the surveying have been requisitioned for, but so far only a small part has been secured and the surveying party has not been able to make much headway. Mr. Chang Chien now arranges with the surveying party to make maps for the more important sections of the area and these maps will be finished within this year. This is the best he can do under the circumstances.

The Nanking River Conservancy School has been established where students will be graduated in two years. Conservancy Schools will be established in other provinces, which will soon turn out useful workers. Mr. Chang Chien will also gather together competent men who possess knowledge of either Chinese topography or modern theories and practice of hydraulic engineering. He admits that such men are hard to get. He will send men to make investigations regarding the flood conditions in the various provinces. The Governors of all provinces will be required to report direct to the Conservancy Bureau on the river conditions so that they may be impressed with the importance of conservancy work, to which they hitherto paid little or no attention.

**Chefoo Harbor Work.**—On account of the continued fine weather, the harbor improvement work at Chefoo is making good progress. The work was started at the base of the cliff, on the brow of which stands the American Consulate. Blocks of stone, which form the most important building material, are being quarried from Peitao island. The contractor is the Chinese compradore of Messrs. Diederichsen & Co. The price quoted is 49 cts. Mex. per ton for delivery at Chefoo Island. Cement is to be supplied by the Onoda Cement Factory through the medium of the Mitsui Bussan Kaisha. The total amount contracted for is 60,000 barrels, the term of supply running for three years.

**New Harbor at Gensan, Korea.**—Construction work on the harbor at Gensan was started with ceremony on August 15, in the presence of General Count Terauchi, Governor-General of Korea, and many other officials.

**Naval Dock at Yokosuka.**—The work on the Yokosuka Naval Dock, largest in the Orient, will be completed in October. The dock was started in July, 1911, with an appropriation of 1,200,000 yen. The length of the dock is 800 feet, width 120 feet, and depth 40 feet. After its completion the large battleships, Kongo and Hiyei can be berthed easily. It is the intention of the naval authorities to complete the dock before the launching of the Yamashiro, which will take place in October.

**Yokohama's new Repair Dock.**—President Asano, of the Toyo Kisen Kaisha has received a permit from the Kanagawa prefectural authorities to reclaim foreshore amounting to 250,000 tsubo at Tsurumi coast. The remaining applications of reclamation with a total of 4,500,000 tsubo will be allowed in the near future. Mr. Asano will build a large dock in Yokohama, where vessels of the size of the Chiyo Maru can easily be repaired.

**Fusan (Korea) Harbor Works.**—It is reported from Fusan that the harbor construc-

tion there, which was started in 1911 at the estimated cost of \$1,904,352, was planned to be completed next year. On account of financial retrenchment by the Government, however, the estimates for the work for next year, amounting to \$240,000, have been reduced by about 20 per cent. The work to be carried out next year consists of constructing a second pier, dredging the sea near the pier and the mouth of the harbor, and constructing a breakwater at Cholyang.

A plan is also mooted among the business men of Fusan and Seoul to establish a small dockyard in Fusan at a cost of approximately \$50,000. The main object of the dockyard will be to take charge of repairs to the vessels of the Chosen Yusen Kaisha, when such vessels do not exceed 600 tons. The erection of such a dockyard will save the necessity of sending such vessels to Japan for repairs, and, in view of the growing importance of Fusan, will prove a welcome addition to the facilities of that port.

**Australian Canal Proposed.**—The assistant treasurer of the Government has been in the Newcastle district investigating an important scheme in connection with the port of Newcastle and Port Stephens. Under a new harbor trust a coastal canal would be dredged, through which vessels could enter or leave Newcastle in all kinds of weather. Port Stephens is the haven for coastal craft in rough weather, and is to be made a naval base. Motor boats at present ply on Tilligerry Creek, which forms part of the route of the proposed canal.

**Irrigation Schemes.**—A Simla correspondent states:—The Government of India have four important irrigation schemes in view. The Sutlej Valley Project is now being worked out by the Punjab Government in consultation with the Bhawalpur and Bikanir Durbar, the Cauvery scheme will also come up in a definite shape as soon as the arbitration proceedings conducted by Sir Henry Griffin are ratified by the Government of India. A new alignment has been proposed for the Sarda project and a complete scheme will be ready for consideration before long. The Sukkur Barrage Scheme is being re-examined by Bombay Engineers and their definite recommendations will reach the Government of India without long delay. With the approaching completion of the Triple Canal Project in the Punjab the Government of India will be able to finance these schemes as soon as the war conditions permit, but the examination of these projects by the Supreme Government and the Secretary of State will take time.

**Coast Preservation in Chekiang.**—The Governor of Chekiang has submitted to the Central Government an estimate of the cost for repairs and construction of the sea dikes of Haining, Haiyen, and Pinghu. The estimated cost is \$231,100, and the Governor requests \$100,000 immediately. The President has instructed the Ministry of Finance to furnish this amount.

**New Harbour at Honto, Japan.**—It is reported that the Governor of Kabafuto has decided to construct a harbour at Honto, a few miles from Otomari, at a total cost of 3,000,000 yen spread over a period of seven years from 1916. The new harbour will be connected with Otomari by a railway, which will be laid by the Mitsui Company.

## PUBLIC UTILITIES

**Macao Water Supply.**—Two syndicates are competing for the contract for laying mains for the water supply. One syndicate makes it

a condition that all the wells in the city shall be closed and that the water-boats shall cease to do business. The other syndicate makes no such conditions, and as the idea of forcing people to connect their property with the water mains is not relished, the public may be said to favour acceptance of the second tender. The water is to be supplied from the Ribeira Grande by boats and pumped up to a reservoir on Penha Hill. Many of the principal streets are being opened up to lay iron pipe mains for sea water for use in case of fire.

The arrival of the plant bought at Singapore at a cost of £14,000 for harbour improvement is shortly expected. It includes a dredger, a tug-boat, two locomotives, a steam elevator, 6,000 metres of rail, twenty wagons and other items. The mud lighters were unsuitable for Macao and it is proposed to invite tenders from Hongkong and Shanghai for such mud-boats as are required.

**Philippine Public Works.**—The program of provincial and municipal public works for the fiscal year of 1915 is steadily growing larger, the total of insular loans to towns and provinces toward their cost during the months of April, May, and June now being P508,250, of which P122,000 is for public market buildings. The biggest project is the proposed water works for Zamboanga. Already a loan of P105,000 has been made and a further loan of P70,000 is to follow when needed.

It is estimated that about P800,000 will be spent for market buildings during 1915, and nearly P700,000 will come from the insular government in the form of loans. For this purpose the half-year total is now P218,000. Loans prior to April 1, went to the following towns: Lemery, Batangas; Sto. Thomas, Batangas; Bacarra, Ilocos Norte; Bauang, La Union; Hilongos, Leyte; Ormoc, Leyte; Penaranda, Nueva Ecija; and Bacon, Samar. Subsequent loans are as follows:

San Pablo, La Laguna, P29,000; San Isidro, Nueva Ecija, 10,000; Bago, Occidental Negros 15,000; Manaoag, Pangasinan, 18,000; San Juan del Monte, Rizal, 10,000; Sorsogon, Sorsogon 25,000; Leon, Iloilo, 15,000.

In addition to these market loans, the insular government has approved the request of Zamboanga for P175,000 to defray part of the cost of the projected water works.

The government has loaned during three months for miscellaneous projects P281,250, distributed as follows:

Batangas, Nasugbu-Tuy road, three bridges P82,500; Bulacan, Municipal building, at Hagonoy, 30,000; Occidental Negros, Bridge on Binalbagan river, 55,000; Ambos Camarines, Pili-Taga on road and bridges, 93,750; and Antique, Provincial building, 20,000.

The executive bureau each year approves loans for special public works projects, aggregating some P2,000,000. The loans are made for terms of not more than 10 years, and bear interest at the rate of three or four per cent, depending upon the particular fund from which loaned. There are four insular funds available for the purpose, these being the friar lands bond fund, the public works bond sinking fund, and the insurance fund, all of which are loaned at the rate of four per cent, and the gold standard fund, loans from which are made at the lower rate of interest.

**Iloilo Water Problem.**—The greatest problem that now confronts Iloilo, "second city of the Philippines," is that of providing an adequate supply of pure drinking water, but the natural and engineering difficulties presented are such that it has been as yet impossible to arrive at any conclusion as to the manner in which such a supply is to be furnished. According to Acting Secretary of Commerce and Police Jaime C. de Veyra, who is now engaged on the problem, there are only three propositions that have been considered. The first was the drilling of artesian wells. Various attempts were made, but only 18 wells were successful, and in these the water secured is

slightly salty. Not only that, but the tests made by the bureau of science show that the salt content is continually increasing.

The second proposal was to bring water from the Tigum River, a distance of 25 kilometers. It has an abundant supply of good water sufficient to serve the ten towns along the route of the mains. The cost of building a reservoir and the necessary aqueduct would be P2,000,000. This is considered too much for the government to expend at present.

The third proposal has been to pipe water from the island of Guimaras, just in front of Iloilo. The engineering problem concerned in this project is difficult as the water must be piped under the sea across the channel, a distance more than three kilometers. The bottom of the channel is rugged, in some places 90 feet deep, in others comparatively shallow. The current is swift, and to lay a pipe line along the bottom would establish an engineering precedent. The greatest drawback is that should the pipes break at any point, the whole line would have to be raised to effect repairs. This could be obviated by tunneling under the channel bed, but the expense involved would be greater than that of the Maasin project. To follow the pipeline plan would not cost more than P250,000, or one-eighth of the cost of the Maasin aqueduct. The acting secretary of commerce and police is inclined to favor the Maasin plan, and it is probable that efforts will be made to secure sufficient funds to enable the government to sanction the project.

**Tayabas Road Progress.**—Governor Lucban of Tayabas is pushing forward the work on a new road in the municipality of Infanta, one of the most northerly towns in the province. A fine concrete market has been inaugurated in the town of Tayabas.

**Mukden's Waterworks.**—Referring to a statement that the Chinese promoters of a new waterworks service for the city of Mukden had arranged with some American capitalists to borrow enough funds to meet all the requirements, the *Manchuria Daily News*, states that, in spite of the close Sino-Japanese relations in South Manchuria and Japan's preferential claim in almost everything therein a loan agreement has been signed between the Chinese authorities and some American capitalists, and that the only question now pending is when and how the delivery of the money should take place.

"In case of these rumours being true, the Japanese may take it as a deliberate snub and even as an insult hurled in their face, since there is no questioning the wisdom of the Japanese offer to extend the waterworks service belonging to the Railway Town to the Chinese city, which will incur only comparatively low cost and labour. Such a snub would go home to the quick all the more stingingly since South Manchuria has come to be bound to Japan with a much closer and stronger tie by virtue of the new Sino-Japanese Treaty."

**Samar's Modern Roads.**—Reports from the Province of Samar, P.I., indicate that its public works are making good progress. Work is being carried on to complete the 12½-mile from Calbayog south to the Gandara River. Five of the six concrete slab and girder bridges on concrete piles or girder abutments are completed. On the 9-mile road from Calbayog to Oquiendo a bridge is being constructed over the Minloan River; 4½ miles of this road are already completed.

## AGRICULTURE

**Cotton Cultivation in China.**—According to the Ministry of Agriculture and Commerce only eight provinces in China are growing

cotton. The area devoted to the cotton plant is approximately 26,000,000 acres and the annual output should amount to 1,509,000 tons of cotton, under proper cultivation.

**Brick-Tea of Foochow.**—Brick-tea manufacture was begun in Foochow early in the seventies. Three factories equipped with British machinery were in full operation within a few years and in 1875 some 6,200,000 pounds were shipped from the port, and four years later, the trade had grown to 13,700,000 pounds. In 1891 a gradual decline began. The transfer, for economical reasons, of the Russian tea market to Kiukiang and Hankow led to the closing of all three foreign factories in Foochow.

In 1910 a Chinese company called the Chee Woo Brick Tea Co. was organized with a capital of \$150,000. The company purchased the building and machinery of the closed factory and now operates two brick-tea presses during the season. Its output last year totaled 1,600,000 pounds, valued at \$86,000 gold.

Practically all this product was pressed from the dust, only 2,000 pounds of the whole leaf being used. The tea bricks are packed in bamboo baskets, of 80 bricks each. A brick of tea dust weighs 40 ounces, the cost of manufacture being 13 cents. A brick of leaf tea weighs 36 ounces and costs to manufacture 19 cents, inclusive of freight to Shanghai, the distributing center. The factory's 200 workmen, in day and night shifts, produce 8,000 bricks a day. Wages inclusive of board, range from 6 to 20 cents per day. The tea dust costs \$2.80 to \$6.72 a picul of 133½ pounds.

**Russia's Big Tea Purchase.**—A special war supply commission has bought all the available Chinese brick tea in stock in Vladivostok, amounting to 700,000 pounds valued at Rls. 10,000,000. Hankow tea merchants will profit by this clearing of the market whilst Chinese growers are sure of good prices.

**China's Grain Crops.**—According to investigations made by the Chinese authorities, the annual yield of cereals in the Republic in an ordinary year is estimated at a little over 880 million piculs. Roughly stated, it comprises the following:—Rice 65,000,000 piculs; wheat 445,000,000; kaoliang 95,000,000; other cereals 120,000,000; beans 155,000,000.

**Stock Raising in China.**—Regulations containing plans for the reclamation of waste lands, cattle raising in Fengtien province and the north, proposed by Yao Hsi-kuang and associates, have been approved by the Ministry. The company will be called the Tofu Reclamation and Cattle Raising Company, and only Chinese citizens are allowed to subscribe to its shares. The company desires to take up some of the vast waste lands in the North, and the development of the natural resources there. The company plans to purchase land in the regions in Taonan and along the banks of the Kweiliu River in Fengtien province, and will finally extend its efforts towards various places in the north of Manchuria and Mongolia. The capital proposed is \$1,200,000 divided into 24,000 shares of \$50 each. As soon as one fourth of the amount is paid in the Company will be formally inaugurated.

**Shantung Cattle for Dairen.**—The import of Shantung cattle to Dairen from both Lungkou and Tsingtao has been almost doubled in quantity since last March, compared with the preceding year. From March to October fish is found in plenty in the market and the consumption of beef is correspondingly affected during the intervening period. Which makes the recent increase in the import figures all the more remarkable.

**Mongol Cattle to Russia.**—The export of Mongolian cattle to Russia has been increasing since the beginning of the War. Cattle are obtained by the exporters at Taonanfu, Chenchiatun, Petune, and Manchouli. The total live stock bargained for at these markets number 200,000 head per annum. Lately cattle are procured also at Hailar, Tsitsihar, Kwanchentze, Changchun, Tienling, Mukden, and Liaoyang.

**Flour Consumption in South Manchuria.**—Although the figures for last year are not yet available, the following statistics giving the consumption returns of flour in South Manchuria for the preceding three years have recently been compiled as follows:—

	1911 sacks	1912 sacks	1913 sacks
Dairen .....	1,539,886	2,161,280	746,082
Newchwang...	681,926	619,636	559,740
Changchun ...	103,365	116,469	132,057
Tiehling .....	48,647	96,058	89,842
Mukden .....	177,830	229,374	349,420
Antung .....	692,560	655,745	610,444
Other cities...	226,457	608,661	528,400
	3,475,078	4,477,223	3,022,994

The above may be classified according to the places of production as under:—

	1911 sacks	1912 sacks	1913 sacks
American .....	2,228,770	2,116,633	865,964
Tiehling .....	463,985	696,286	968,310
Harbin and Changchun.	117,702	417,386	309,560
Shanghai and Hankow ...	664,613	1,246,918	879,160

**Wild Silk of China.**—The country about Fenghuangcheng, Manchuria, is the most thriving wild sericultural centre in that region, having Antung for the accumulating and distributing centre. The bulk of sericultural products of this locality is sent to Antung by train while the outputs of Kuantien, Siuyen, etc., are brought over to Antung by carts. Tussah silk is reeled from wild cocoons either at the places of production or at Antung. The export returns of the sericultural products from Antung are as under.

	Tussah silk Piculs	Wild silk Piculs	Waste silk Piculs	Cocoons Piculs
1909.....	6,507	13,387	3,636	1,257
1910.....	3,773	8,850	3,068	411
1911.....	5,040	92,807	5,645	978
1912.....	7,268	98,945	3,052	208
1913.....	5,847	120,183	4,591	127

**Manchurian Tobacco.**—The stoppage of import of Russian leaf into Manchuria has given an impetus to Manchurian tobacco, which is grown in considerable quantities in the Kirin district. Local cigarette factories have been mixing Manchurian leaf with the Russian and producing an article suitable to the Russian palate, so there is no reason why experts should not be able to blend Manchurian tobacco and produce cigarettes which will find favour among Russians, who undoubtedly are the biggest cigarette smokers in the world.

**Sugar in Szechuan.**—The Acting Governor of Szechuan province has forwarded to Peking a memorial on the sugar industry, stating that forty hsien in the province have extensive sugar cultivation. Sugar is the third most important agricultural product of the province. Under Viceroy Chao Erh-hsun efforts were made to develop the industry in the province to take the place of the opium cultivation, a sum of \$150,000 being raised in Chuchung to establish modern refineries. The Acting Governor is anxious to recover ground lost by the Revolution and is working for the estab-

lishment of the new refineries. He estimates that \$1,000,000 will carry out the work on an adequate scale. Of this sum he has raised \$400,000 from official sources, and is appealing to the Ministry of Agriculture and Commerce to assist in the raising of the remaining \$600,000. He proposes to issue 12,000 shares of \$50 each to be taken up both within and without the province, the proposed undertaking to be a joint Government and commercial concern.

**To Cultivate Hainan.**—According to the Sain Weekly Mail five rich Chinese merchants, returned to Canton from abroad, have been granted permission to visit the island of Hainan, with a view to floating a company for promoting industries and agriculture there and clearing the land of its timber. They guaranteed \$2,000,000 and are being given protection on their trip.

**China Oil Tree in U. S.**—The adaptability of the Chinese wood-oil tree for cultivation in northern Florida seems to have been proven by recent experiments and a tree at Tallahassee, Fla., bore two bushels of the fruit last season. The United States imports annually about 5,000,000 gallons of Chinese wood oil, valued at \$2,000,000. As the demands of the American varnish trade are steadily increasing this affords a very large domestic market for this prospective new Florida industry. The tree is *Aleurites cordata* (Chinese tung yu), the seeds yielding the nut from which the oil is extracted.

**Japan's Rice Crop Estimate.**—The first estimate on the rice crop this year, taken August 27, is 57,686,525 koku. That is larger than the crops in any of the last ten years, which figures follow:

1905, 38,172,560 koku; 1906, 46,302,530; 1907, 49,052,065; 1908, 51,933,893; 1909, 52,437,662; 1910, 46,633,376; 1911, 51,712,433; 1912, 50,220,509; 1913, 50,255,267; 1914, 57,006,208; 1915 (estimates), 57,686,525; average crop, 51,312,353.

The Tokyo Rice Exchange market has been experiencing slump after slump since the publication of the above Government estimate. The quotation on Monday was 12.07 yen, 22 sen below the lowest price recorded of last autumn. According to an authority in the rice trade, 13 yen on the Rice Exchange market is the minimum mark at which farmers can pay for the cost of production, but when quotations fall below that mark they cannot even pay their taxes.

**Korean Tobacco for China.**—Great activity has been evidenced lately in the exportation of Korean leaf tobacco to Tsingtao and Newchwang. An order from the latter place for 41,250 pounds has lately been received by a local dealers' association, while cigarettes in large numbers have been shipped from Chosen to Tsingtau since the capture of that place by the Japan forces. It is hoped that this favorable condition will be maintained.

**Japanese Rice Fields.**—According to returns compiled by the Hypothec Bank of Japan, based upon the reports of the agricultural associations of all districts throughout Japan, the market price of rice fields is 699 yen per tan (\$1,421 per acre) in Hiroshima Prefecture for the maximum, and 61 yen per tan (\$124 per acre) in Okinawa Prefecture for the minimum, while the average price per tan is 416 yen (\$846 per acre) for the best rice fields, 167 yen (\$340 per acre) for the poorest, and 280 yen (\$560 per acre) for the ordinary grade, the last figure showing a decrease of 27 yen (\$55 per acre) as compared with corresponding period of 1913.

**Korean Cattle for Japan.**—The Japanese Government will ask the Diet for \$40,000 to erect a cattle quarantine station at Tsuruga.

This has been brought about by the efforts of two or three men who desired to import Korean cattle into Japan. It is thought probable that, when the new quarantine station is opened, a regular service will be inaugurated between Tsuruga and the ports on the east coast of North Chosen.

**Philippine Sugar Central.**—Isabela, Occidental Negros, is to be the site for the Government P2,000,000 sugar central. This means that the Isabela Milling Company, Inc., representing at present 42 hacenderos, with 18 more who will probably affiliate, the 42 controlling approximating 5,000 hectares (12,500 acres) of land already in cane, will have a modern milling plant with a capacity of 1,000 tons of cane per day, and expected to turn out from 110 to 125 tons of 96 degree centrifugal sugar every 24 hours. The site chosen by the Central Sugar Board is on the Binalbagan River, 18 kilometers from the port of Hinigaran, to which a narrow gauge railroad line will be constructed. Other projects under consideration were those of Maa and Silay in Occidental Negros and Pontevedra, Capiz.

The recent visit of the board to the named districts developed the fact that all the projects were excellent.

The board found itself having to select out of four good projects the one most deserving of immediate government aid. Each project was examined from every possible point of view and it was decided that Isabela presented the project where more benefit could be given and which was as fully sure of success as any of the others.

The determining factors were: least engineering difficulties; perfect unanimity between hacenderos; most good to be done by raising the quality of sugar from its present low quality to a product readily saleable in the world's markets.

The board stated that the other three projects were by no means rejected and should the board find itself with additional funds it will be pleased to give them further and full consideration. An open specification is in the course of preparation and will be published in a few days. The present intention of the board is to have the central factory built and operating in the Isabela district by December 15, 1916.

**Philippine Sugar Crop.**—According to reliable crop forecasts, believed to be made by experts who have gone over the district, 4,000,000 piculs of sugar will be harvested this season in the islands of Negros and Panay. During the 14 years residence in Negros, of an American hacendero, he had never known or heard of a larger crop than the present acreage, and according to statements made by other hacenderos who have resided there for forty years, never before has it been more difficult to obtain money for harvesting crops than at the present time.

The exportations of sugar from this district in July were 56,932 171 kilos of sugar, valued at P5,847,451, shipped according to value, as follows: to China P2,240,785; to the United States, P3,365,776; and to Japan, P230,900.

It is interesting to note that for the first seven months of this year the collections at this port have amounted to P1,139,526.22, while the collections for the same period of last year showed only P751,714.05, an increase for this year's period of P287,811.38.

**P. I. Province Aided.**—The P35,000 appropriation made recently by the Philippine commission for the Mountain province, according to an official announcement is to be distributed in the following manner: For the purchase of seeds and plants to be apportioned among the various rancherios suffering from the recent drought, P10,000; For the salaries of additional teachers, P7,500; For the payment of sanitary inspectors and the purchase of medicines, P5,000; For irrigation and other general expenses, P12,500.

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## Anti-Fouling Composition

Burrell & Co., Ltd.  
J. Dampney & Co.

## American Iron

American Rolling Mills Co.

## Art Oilcloths

F. Reddaway & Co.

## Asbestos Goods

Anderson, Meyer & Co.

## Asphalt Block Filler

Standard Oil Co.

## Ball and Tube Mills

Edgar Allen & Co.

## Automatic Weighbridges

W. & T. Avery, Ltd.

## Automobile Tires

Firestone Tire and Rubber Co.

## Banks

Bank of China  
Deutsch-Asiatische  
Hongkong and Shanghai Banking Corp.  
International Banking Corp.  
Banco Español Filipino  
Russo-Asiatic Bank  
Yokohama Specie Bank.

## Barbed Wire

U. S. Steel Products Co.

## Bearings (Railway Car)

T. H. Symington Co.

## Bedsteads

Simmon Mfg. Co.

## Belting

Geo. Angus & Co., Ltd.  
F. Reddaway & Co., "Camel Hair," etc.  
Shanghai Machine Co.

## Blasting Powder

Curtis's & Harvey Ltd.  
Rendrock Powder Co.

## Bleaching Plants

Mather & Platt, Ltd.

## Blowers

Frank L. Strong Machinery Co.

## Boilermakers

Babcock & Wilcox, Ltd.  
A. F. Craig & Co.  
Taikoo Dock & Engineering Co.  
Shanghai Dock & Engineering Co.

## Boiler Tubes

Royles Ltd.

## Boiler Fittings

Babcock and Wilcox  
Shewan, Tomes and Co.

## Brass and Bronze Tubing

Broughton Copper Co., Ltd.

## Bridge-Builders

White & Co., Inc., J. G.  
Shanghai Dock & Engineering Co., Ltd.

## Bridge Materials

United States Steel Products Co.

## Building Materials

Haywood Bros. & Eckstein Ltd.  
Malthold Paraffine Paint Co.  
W. H. Anderson & Co.

## Cables, Telephone, Telegraph Supplies

Bellis & Morecom, Ltd.  
General Electric Co.  
W. T. Henley's Telegraph Works Co., Ltd.  
Melchers & Co.  
Westinghouse E. & M. Co.

## Cables

Anderson, Meyer & Co.  
Shewan, Tomes & Co.

## Cableways

Lidgerwood Mfg. Co.

## Calorifiers

Royles, Ltd.

## Carriage Door Locks

Jos. Kaye and Sons Ltd.

## Cars and Trucks (Railway)

Hurst, Nelson and Co.  
Shewan, Tomes and Co.

## Car Wheels and Axles

Hurst, Nelson & Co., Ltd.  
United States Steel Products Co.

## Cattle Guards

Fairbanks, Morse & Co.

## Cement

Anderson & Co., W. H.  
Green Island Cement Co., Ltd.

## Cement Machinery

Austin Drainage Excavator Co.

## Centrifugal Pumps

Drysdale & Co.  
Worthington Pump Co.

## Chain Grate Stokers

Babcock & Wilcox, Ltd.

## Chemical Extraction Plants

A. F. Craig & Co., Ltd.

## Chimneys

Babcock & Wilcox Ltd.  
A. F. Craig & Co.

## Chromium Steel

Bohler Bros. & Co., Ltd.

## Cigar and Cigarette Manufacturers

Cia. Gral. de Tabacos de Filipinas  
Germinal Cigar Factory  
Olsen & Co., Walter E.

## Circuit Breakers

General Electric Co.  
Westinghouse E. & M. Co.

## Cloth Finishing Plants

Mather & Platt, Ltd.

## Coal Handling Machinery

Babcock & Wilcox Ltd.

## Coal Mining Co.'s

Kailan Mining Administration  
Peking Syndicate, Ltd.  
South Manchuria Railway Co.

## Compressors, Centrifugal

General Electric Company

## Concrete Mixers

Austin Drainage Excavator Co.

## Concrete Reinforcement

Shewan, Tomes and Co.  
U. S. Steel Products Co.

## Condensing Plants

Worthington Pump Co., Ltd.

## Contractors, Electrical

Mather & Platt, Ltd.  
Shanghai Dock & Engineering Co. Ltd.  
Arnhold, Karberg & Co.  
Shewan Tomes & Co.  
Frank L. Strong  
Siemens China Co.  
Dick, Kerr & Co., Ltd.

## Contractors, (General)

Bohler Bros. & Co.  
Frank L. Strong  
Shanghai Dock & Engineering Co. Ltd.  
White & Co. Inc., J. G.

## Contractors Supplies

Austin Drainage Excavator Co.

## Consulting Engineers

White & Co., Inc. J. G.

## Conveyors

Babcock & Wilcox Ltd.

## Copper Tubing

Broughton Copper Co., Ltd.  
Corrugated Roofing

## Corrugated Iron

American Rolling Mill Co.

## Counting Machines

W. & T. Avery Ltd.

## Couplers

McConway & Torley Co.

## Cranes

Babcock & Wilcox Ltd.

## Crushers

Lehigh Car, Wheel and Axle Wks.

## Culverts

Corrugated Iron

## Deodorising Oil Plant

A. F. Craig Co., Ltd.

## Diamond Drill Boring

Peking Syndicate, Ltd.

## Diesel Engines

Westinghouse E. & M. Co.

## Diving Apparatus

A. J. Morse & Son

## Door Locks

Jos. Kaye and Sons Ltd.

## Drag Line Excavator

Lidgerwood Mfg. Co.

## Drawing Instruments

Andersen, Meyer & Co.

## Dredgers

Middleton & Co., Ltd.  
Priestman Bros. Ltd.  
Shanghai Dock & Engineering Co., Ltd.

## Drop Steel Forging and Stamping

Anger Mfg. & Supply Co.

## Dry Batteries

Andersen, Meyer and Co.

## Drydocks

Shanghai Dock and Engineering Co.  
Taikoo Dock & Engineering Co.  
Hongkong and Whampoa Dock Co.  
Mitsu Bishi Dockyards & Eng. Wks

## Dyeing Plants

Mather & Platt, Ltd.

## Economizers

Babcock & Wilcox Ltd.

## Educational

International Correspondence Schools

## Electric Hoists

General Electric Co.  
Lidgerwood Mfg. Co.

## Electric Lighting Plants

Andersen Meyer & Co.  
Arnhold, Karberg & Co.  
Dick, Kerr & Co., Ltd.  
Westinghouse E. & M. Co.  
Fearon, Daniel & Co.  
General Electric Co.  
Siemens China Co.  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.  
Shewan, Tomes & Co.  
Frank L. Strong Machinery Co.  
U. S. Steel Products Co.  
Western Electric Co.

## Electrical Supplies

Andersen, Meyer & Co.  
Arnhold, Karberg & Co.  
Jardine, Matheson & Co.  
Babcock & Wilcox  
Fearon, Daniel & Co.  
General Electric Co.  
Mather & Platt, Ltd.  
Shewan, Tomes & Co.  
Siemens China Co.  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.  
U. S. Steel Products Co.  
Western Electric Co.

## Engines

Shanghai Dock & Engineering Co., Ltd.  
A. F. Craig & Co.

## Evaporators

Royles Ltd.

## Excavators and Elevators

Austin Drainage Excavator Co.  
Priestman Bros. Ltd.  
Shanghai Dock & Engineering Co., Ltd.

## Explosives

Arnhold, Karberg & Co.  
Curtis's & Harvey, Ltd.  
Jardine, Matheson & Co.  
Rendrock Powder Co.

## Fan Blowers

Drysdale & Co.

## Feed Water Heaters

Babcock & Wilcox, Ltd.  
Royles, Ltd.

## Ferro Manganese

U. S. Steel Products Co

## Files

Bohler Bros. & Co., Ltd.

## Filters (Mechanical)

Mather & Platt, Ltd.

## Firebrick

W. H. Anderson & Co.  
Kailan Mining Administration

## Fire Engine

Dick, Kerr & Co., Ltd.

## Fire Prevention Apparatus

Mather & Platt, Ltd.

## Filament Lamps

Dick, Kerr & Co., Ltd.  
Frank L. Strong  
Siemens China Co.  
Westinghouse E. & M. Co.

## Flat Turret Lathe

Jones & Lamson Mchy. Co.

## Folding Chairs

Simmons Mfg. Co.

**Food Products**

Anderson &amp; Co., W. H.

**Forwarding Agents**

W. H. Anderson and Co.

**Fuses and Fuse Blocks**General Electric Co.  
Westinghouse E. & M. Co.**Galvanized Roofing**

American Rolling Mill Co.

**Gas Engines**Mather & Platt, Ltd.  
Worthington Pump Co., Ltd.**Gasoline Lighting Plants**

Andersen, Meyer &amp; Co.

**Gas Producer Plants**

Westinghouse E. &amp; M. Co.

**Gears, Silent**

General Electric Co.

**Generators, Electric**

General Electric Co.

**Graphite Paint**

J. Dampney &amp; Co.

**High Speed Engines**

Drysdales &amp; Co.

**Hoisting Engines**

Lidgerwood Mfg. Co.

**Horse Shoes**

U. S. Steel Products Co.

**Hose**Geo. Angus & Co.  
Interlock Metal Hose Co.  
F. Reddaway & Co., Fire Hose "Sphincter"  
Grip," Armoured Hose, etc.**Hotels**South Manchuria Railway.  
Chosen Railways**Ice Machinery**

Vulcan Iron Works

**Insulating Material**

Micanite &amp; Insulators Co., Ltd.

**Insurance**

Stevenson &amp; Co., Ltd., W. F.

**Ironfounders**

A. F. Craig &amp; Co.

**Job Printers**

Commercial Press

**Journal Boxes**

T. H. Symington Co.

**Knitting Machines**

Shewan, Tomes and Co.

**Lanterns and Lamps**

Andersen, Meyer and Co.

**Locks**Joseph Kaye & Sons, Ltd.  
Shewan, Tomes & Co.**Locomotive Speed Indicator and Recorder**

Hasler Telegraph Works.

**Locomotive Headlights**

Pyle-National Electric Co.

**Logging Machinery**

Lidgerwood Mfg. Co.

**Lubricants**Albany Lubricating Co.  
Standard Oil Co.  
W. H. Anderson & Co.**Lumber Dealers**Robert Dollar Co.  
Jardine, Matheson & Co.  
Norton Harrison Co.  
Shewan, Tomes & Co.**Machinery Merchants**Andersen, Meyer & Co.  
Arnhold, Karberg & Co.  
Shanghai Machine Co.  
Fearon, Daniel & Co.  
Frank L. Strong  
Schuchardt & Schutte,  
Shanghai Dock & Engineering Co., Ltd.**Machine Tools**American Tool Works Co.  
Jones & Lamson Mch. Co.  
Schuchardt and Schutte.**Marine Engines**Fairbanks, Morse & Co.  
W. F. Stevenson & Co., Ltd.**Manganese Steel**Edgar Allen & Co.  
Bohler Bros. & Co., Ltd.**Manila Rope**Johnson Pickett Rope Co  
Yuchansti & Co.**Measuring Instruments**General Electric Co.  
Westinghouse E. & M. Co.**Meat Products**

W. H. Anderson &amp; Co.

**Mechanical Rubber Goods**

F. Reddaway &amp; Co.

**Meters, Flow-Air, Gas and Water**

General Electric Co.

**Mill Machinery**Shanghai Dock & Engineering Co., Ltd.  
A. F. Craig & Co., Ltd.**Mine Locomotives**

General Electric Co.

**Mine Prospecting and Development**

Peking Syndicate, Ltd.

**Mineral Oil Plants & Machinery**

A. F. Craig &amp; Co.

**Mining Machinery**Melchers & Co.  
Shanghai Dock & Engineering Co., Ltd.  
Shewan, Tomes & Co.  
Gould's Manufacturing Co.**Motor Omnibus**

Hurst Nelson and Co., Ltd.

**Motors**General Electric Co.  
Shanghai Dock & Engineering Co., Ltd.**Motor Launches**

Shanghai Dock &amp; Engineering Co., Ltd.

**Motor Spirits**

Standard Oil Co.

**Motor Tyres**Firestone Tire and Rubber Co.  
F. Reddaway & Co.**Motor Vehicles**Commercial Car Co.  
Fairbanks Morse & Co.**Oil Break Switches**General Electric Co.  
Westinghouse E. & M. Co.**Oiled Cloths and Papers**

Micanite and Insulators Co., Ltd.

**Oil Engines**

Fairbanks, Morse &amp; Co.

**Oil Mill Machinery**

A. F. Craig &amp; Co.

**Oil Separators**

Worthington Pump Co., Ltd.

**Oilwell Casing and Tubing**

U. S. Steel Products Co.

**Ozone Machines**

Siemens China Co.

**Packings**

F. Reddaway &amp; Co.

**Paints, Oils and Varnish**Standard Oil Co.  
Albany Lubricating Co.**Photo-Engravers**

Commercial Press

**Piling (Sheet Steel)**

U. S. Steel Products Co.

**Platform Scales**

W. &amp; T. Avery, Ltd.

**Power Plants**

Frank L. Strong Machinery Co.

**Printing Machinery**Jardine, Matheson & Co.  
Shewan, Tomes Co.**Pulleys (Steel)**Schuchardt & Schutte  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.**Pulverizers**

Lehigh Car, Wheel and Axle Works.

**Pumps**Anderson, Meyer & Co.  
Drysdales & Co. Ltd.  
Fairbanks, Morse & Co.  
General Electric Co.  
Jardine, Matheson & Co.  
Joseph Evans & Sons  
Mather & Platt, Ltd.  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.  
Shewan, Tomes & Co.  
The Goulds Manufacturing Co.  
Worthington Pump Co.**Pulverizing Mills**

Lehigh Car, Wheel and Axle Wks.

**Radial Drills**

American Tool Works Co.

**Railometers**

W &amp; T. Avery, Ltd.

**Railroads**Chinese Government Railways  
Chosen (Korea) Railways.  
South Manchuria  
Southern Pacific Co.**Railroad Supplies**American Locomotive Co.  
Andersen, Meyer & Co.  
Arnhold, Karberg & Co.  
Baldwin Locomotive Works.  
Robert Dollar Co.  
Dick, Kerr & Co., Ltd.  
Fearon, Daniel & Co.  
Fairbanks, Morse & Co.  
Hurst, Nelson & Co., Ltd.  
Jardine, Matheson & Co., Ltd.  
Lima Locomotive Works.  
McConway & Torley Co.  
Pyle-National Electric Co.  
Railway Signal Co., Ltd., The  
T. H. Symington Co.  
Shewan, Tomes & Co.  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.  
U. S. Steel Products Co.**Rail Weighers**

W. &amp; T. Avery, Ltd.

**Railway Signals**

Railway Signal Co.

**Railway Weighbridges**

W. &amp; T. Avery, Ltd.

**Refrigerating Machinery**Anderson, Meyer & Co.  
Vilter Mfg. Co.  
Vulcan Iron Works.**Reinforced Concrete Construction**Shanghai Dock & Engineering Co., Ltd.  
U. S. Steel Products Co.**Rheostats**

General Electric Co.

**Road Rollers**

W. F. Stevenson and Co.

**Roofing Materials**American Rolling Mill Co.  
W. H. Anderson & Co.  
Norton & Harrison.  
U. S. Steel Products Co.**Rope Manufacturers**Johnson-Pickett Rope Co.  
U. S. Steel Products Co.  
Ynchausti & Co.  
Shewan, Tomes & Co.**Rotary Converters**General Electric Co.  
Westinghouse E. & M. Co.**Rotary Dryers**

Lehigh Car, Wheel and Axle Wks.

**Rubber Tyres**

Firestone Tire and Rubber Co.

**Safes**W. H. Anderson & Co.  
Mustard & Co.  
Shewan, Tomes & Co.**Safety Valves**

Royles, Ltd.

**Saw Mill Machinery**

Andersen, Meyer and Co.

**Scales**

W. &amp; T. Avery, Ltd.

**Sewer Pipe & Tile**

W. H. Anderson &amp; Co.

**Sheet Steel**

U. S. Steel Products Co.

**Shipping Agents**Cia. General de Tabacos  
Shewan, Tomes & Co.  
Stevenson & Co., Ltd.**Shipbuilding and Repairs**Fiat-san Giorgio Ltd.  
Tsingtauer Werft  
Hongkong & Whampoa Dock Co., Ltd.  
Mitsu Bishi Dock and Engineering Works  
Shanghai Dock and Engineering Co., Ltd.  
The Taikoo Dockyard and Engineering Com-  
pany of Hongkong, Limited**Ship-Chandlery**

Ynchausti &amp; Co.

**Steamship Companies**Cia. Transatlantica.  
Robert Dollar Company.  
Pacific Mail S. S. Co.  
Ynchausti & Co.  
Toyo Kisen Kaisha.**Steam Hoists**

Lidgerwood Mfg. Co.

**Steam Kettles**

Royles Ltd.

**Steam Turbines**Dick, Kerr & Co. Ltd.  
General Electric Co.  
Westinghouse E. & M. Co.**Steel Manufacturers**

United States Steel Products Export Co.

**Steel Works**Bohler Bros. & Co., Ltd.  
U. S. Steel Products Co.**Stokers**

Babcock &amp; Wilcox Ltd.

**Stretchers**

Simmons Mfg. Co.

**Structural Steel**Bohler Bros. & Co.  
Shanghai Dock & Engineering Co., Ltd.  
U. S. Steel Products Co.**Sugar Machinery**

A. F. Craig &amp; Co.

**Superheaters**Babcock & Wilcox Ltd.  
Schmidt Superheating Co.**Tanks**Pacific Tank and Pipe Co.  
Shanghai Dock & Engineering Co., Ltd.  
U. S. Steel Products Co.  
A. F. Craig & Co.**Telephones**Anderson, Meyer & Co.  
Kellogg Switchboard & Supply Co.  
The Western Electric Co.  
Westinghouse E. & M. Co.**Testing Machines**

W. &amp; T. Avery, Ltd.

**Textile Machinery**

A. F. Craig &amp; Co.

**Tiles and Bricks**Green Island Cement Co., Ltd.  
Kailan Mining Administration.**Tin Plates**

U. S. Steel Products Co.

**Tobacco Dealers**British-American Tobacco Co., Ltd.  
Cia. General de Tabacos  
Olsen & Co., Walter E.**Tools**American Tool Works Co.  
Shanghai Machine Co.  
Shanghai Dock & Engineering Co., Ltd.**Tool Steel**Bohler Bros. & Co. Ltd.  
U. S. Steel Products Co.**Towers Cooling**

Worthington Pump Co., Ltd.

**Track Gauges and Levels**

Fairbanks, Morse &amp; Co.

**Tramcars**

Hurst, Nelson &amp; Co. Ltd.

**Tramway Equipment**Dick Kerr & Co. Ltd.  
Westinghouse E. & M. Co.**Tramway Supplies and Specialties**

Anger Mfg. &amp; Supply Co., Ltd.

**Transformers, Electric**

General Electric Co.

**Trucks**

Commercial Car Co.

**Tube Mills**

Edgar Allen &amp; Co.

**Tungsten Steel**

Bohler Bros. &amp; Co., Ltd.

**Turbine Pumps**

Worthington Pump Co., Ltd.

**Turbines, Steam**

General Electric Co.

**Turbo-Blowers**

Westinghouse E. &amp; M. Co.

**Turret Lathes**

Jones and Lamson Mch. Co.

**Valves**

Shewan, Tomes &amp; Co.

**Vanadium Steel**

U. S. Steel Products Co.

**Vegetable Oil Plants**

A. F. Craig &amp; Co.

**Ventilating Apparatus**

Shewan, Tomes &amp; Co.

**Water Softeners**

Babcock &amp; Wilcox Ltd.

**Waterworks Equipment**Edgar Allen & Co. Ltd.  
Worthington Pump Co.**Weaving Machinery**

Shewan, Tomes &amp; Co.

**Weighing Machines—Weigh Bridges**

W. &amp; T. Avery, Ltd.

**Welding Outfits, Electric Arc**

General Electric Co.

**Windmill**

Fairbanks, Morse &amp; Co.

**Wireless Telegraph Apparatus****Wire Nails**

U. S. Steel Products Co.

**Wire Rope and Cables**Bohler Bros. & Co., Ltd.  
U. S. Steel Products Co.**Wood Working Machinery**American Tool Works Co.  
Defiance Machine Works  
Shanghai Dock & Engineering Co., Ltd.**Wrenches**

Trimont Mfg Co.